

EXCAVATIONS AT KAUNDINYAPURA

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PRINTED AT
GOVERNMENT CENTRAL PRESS
BOMBAY - 4

PRICE RS. 30 = 00

1968

PUBLISHED BY
THE DIRECTOR OF ARCHIVES AND ARCHAEOLOGY
MAHARASHTRA STATE, BOMBAY

CONTENTS

PAGES

ACKNOWLEDGEMENTS

SUMMARY OF RESULTS

ANTIQUITY OF KAUNDINYAPURA (Dr. M. G. Dikshit & Shri D. R. Amladi) ..	1-6
THE EXCAVATIONS, STRATIGRAPHY AND CHRONOLOGY ..	7-31
THE POTTERY	32-73
GRAFFITI ON POTTERY (Shri M. R. Inamdar) ..	74-84
 SMALL FINDS—	
A. BEADS	85-105
B. TERRACOTTA OBJECTS	106-112
C. METAL OBJECTS	113-123
D. ORNAMENTS, ETC.	124-129
E. STONE OBJECTS	130-133
F. SEALS AND COINS (Shri V. P. Rode)	134-139
 TECHNICAL REPORTS—	
KAUNDINYAPURA PLANT ECONOMY IN PRE-HISTORIC AND HISTORIC TIMES [by Prof. Vishnu Mittre] ..	140-147
ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA [Dr. (Mrs.) D. R. Shah] ..	148-157
INDEX	159

ACKNOWLEDGEMENTS

THE excavation of Kaundinyapura, described here was carried out in 1962-64, by Dr. Moreswar G. Dikshit of the Nagpur University, under the initiation of the Education and Social Welfare Department, Government of Maharashtra and with the assistance of the Department of Archaeology of the same Government. Shri P. J. Chinmulgund, I.C.S., Secretary of the Education Department, himself a very keen numismatist and a great lover of Indian antiquities took a very keen interest in this matter. Knowing that the archaeological stratigraphy of the Vidarbha region was a blank, he not only visited the ancient site of Kaundinyapura before its excavation for a preliminary survey but also negotiated for its early excavation. The success of the present excavation is entirely due to his initiative and efforts. On his transfer from the Education Department, the work was again enthusiastically supported by Shri V. M. Joshi, I.C.S., Secretary to Government, Education and Social Welfare Department. Dr. P. M. Joshi, M.A., Ph.D. (Lond.), Director of Archives and Historical Monuments, Maharashtra State, supported the proposal of the excavation on behalf of his Department and very willingly placed the entire resources of his Department to carry out the work. He visited Kaundinyapura while the excavations were in progress and made useful comments. The Director of Excavations was assisted by the following personnel of the Department. Shri D. R. Amladi, M.A., the then Assistant Director of Archaeology, remained in charge of the general administration of the camp. He also supervised the excavation of Sector Kdn-2, which has yielded the most important amongst the antiquities at the site. Shri M. R. Inamdar, Assistant Curator, Shri Bhavani Museum, Aundh, was deputed for training in excavation by the Government and was in charge of the main Trench B3 at the Bhim Tekdi. He rendered useful assistance in organizing and classification of the pottery both at the site and for study in the present report. Both Shri Amladi and Inamdar have contributed to the sections on the antiquity of Kaundinyapura and the pottery therefrom respectively. In the excavation work useful assistance was given by Shri P. M. Mulay, Archaeological Assistant in the Central Museum, Nagpur. All the photographs were taken by Shri M. M. Gupta, Senior Cameraman in the Department, with his usual skill. The surveying of the site was completed by Shri Davar and Shri Rege of the same Department, who also prepared many of the drawings included in this Report. The drawing of the small finds and the sections as well as the colour plate are the work of Shri V. V. Athavale, Artist in the Central Museum, Nagpur, who also rendered useful help at the site in the registration of the finds.

Shri V. P. Rode, M.A., Curator of the Central Museum, Nagpur, not only discussed with the author the various problems relating to the excavation but also agreed kindly to write the section relating to the coins. The cleaning and preservation of the antiquities, both in the field and in the laboratory was done by Shri Mulay. The transport facilities were provided by the Education Department through Shri D. B. Sahasrabuddhe, the Deputy Director of Education, Vidarbha region and the Principal of the B. T. College, Amaraoti. To all these I am deeply beholden for the assistance generously and willingly given and I am particularly indebted to Shri P. J. Chinmulgund for his initiation of the first archaeological excavation in Vidarbha. I also would like to mention the name of Shri A. Ghosh, M.A., F.S.A., the Director General of Archaeology in India, New Delhi, in this connection.

I express my gratitude to the Head of the Department of Tertiary Palaeobotany and Palynology, Birbal Sahni Institute of Palaeobotany, Lucknow, for having the seed samples investigated by Shri Vishnu Mittre, whose report thereon appears as an appendix to the present work. Thanks are also due to Shri D. C. Khare of the Government Polytechnic, Nagpur, for studying the crucibles from the Black and Red ware layers. Shrimati (Dr.) D. Shah very kindly undertook to study the bones from the excavation, for which our thanks are due to her.

The labour employed for the excavation was mostly recruited from Kaundinyapura and the adjoining village Deurwada on the opposite bank. The workers understood their task very quickly and evinced great interest when the antiquities were discovered. The local people visited the excavations almost regularly and contributed greatly to the success of the camp.

MORESHWAR G. DIKSHIT

SUMMARY OF RESULTS

KAUNDINYAPURA (District Amaraoti) is situated on the northern banks of the Wardha river and is believed to represent the capital of ancient Vidarbha of hoary antiquity. Rukmini, the daughter of Bhishmaka, who was eloped by Lord Krishna; Damayanti, who shared the fate of Nala, the King of Nishadha; Lopamudra, wife of sage Agastya, are some of the well-known names associated with this ancient place in Indian lore.

The archaeological importance of this place was first recognised by Shri A. R. Deshpande, then a Civil Judge and a well-known social worker in 1928. The antiquities were later studied by Rao Bahadur K. N. Dikshit in 1936 and by research workers from the Deccan College Research Institute, Poona, in 1959.

This Report embodies the results of a small-scale excavation conducted there by Dr. Moreshwar G. Dikshit under the auspices of the Government of Maharashtra in May-June 1962 and April-May 1964.

Starting its career as a megalithic settlement, the township grew into pretention during the Mauryan Period (300 B.C.). It had a straggling existence under the Satavahans (200 B.C. to 200 A.D.) and after a period of decay grew into prominence again during the Muslim Period (1500-1700 A.D.) and developed into a fortified outpost.

This Report, a fore-runner of large-scale operations in future, discusses the various finds like pottery, coins, beads, iron objects etc., and establishes for the first time a closely observed stratigraphy for the Vidarbha region of Maharashtra.

TEXT FIGURES

1. Sketch map of localities mentioned in the report.
2. Plan of structures : Muslim buildings.
3. Kdn-1 : Bhim Tekdi : section of Trench B3.
4. Contour map of site Kdn-2.
5. Kdn-2 : Plan of Mauryan and Satavahana structures.
6. Kdn-2 : Section of the main Trench.
7. Kdn-2 : Main Trench section XY showing soak-pit.
8. Kdn-2 : Trench Z Section.
9. Map of Maharashtra showing Mauryan and Satavahana sites.
10. Map of Vidarbha showing Megalithic sites.
11. Pottery Cups and Bowls : Types 1-7.
12. Pottery Kundas and Vadgas : Types 8-16.
13. Pottery Necks of Ranjans and Gharas : Types 17-35.
14. Pottery Necks of Vessels : Types 36-55.
15. Pottery Mica-slipped : Types 56-67.
16. Pottery Lids and Jar-covers : Types 68-79.
17. Pottery Late Black-and-Red ware dishes : Types 80-96.
18. Pottery Late Black-and-Red ware dishes : Types 97-109.
19. Pottery Basins and Black-and-Red ware bowls : Types 110-118.
20. Pottery : Megalithic Pottery : Types 119-131.
21. Pottery : Types 132-143.
22. Pottery Dishes : Types 144-149.
23. Pottery : Types 150-156.
24. Pottery of the Satavahana Period : Types 157-172A.
25. Pottery : Types 173-185.
26. Pottery : Types 186-203.
27. Graffiti : Marks 1-55.
28. Graffiti on Pottery : Figures 1-17.
29. Graffiti on Pottery : Figures 18-34.
30. Graffiti on Pottery : Figures 35-55.
31. Etched Carnelian Beads.
32. Carnelian and Agate Beads.
33. Indian Eye-beads of Glass.
34. A Votive Tank.
35. Iron objects 1-21.
36. Iron objects 22-38.
37. Copper objects 1-13.
38. Ear plugs and a weight 1-8.
39. Chisel, ring stones and a ball.

PLATES (at the end)

- I. A. Site General View of Kaundinyapura.
B. The Rukmini Temple from Bhim Tekdi.
- II. A. The Rukmini Temple.
B. Temples from the river-bed.
- III. A. Ghat and Kunda in the river-stream.
B. The Kunda from the Ghat.
- IV. A. The Devi Temple from North.
B. The Wardha river overlooking Deurwada (mark the sand bars and islands in the river-bed).
- V. The soak-well.
- VI. Corner of Muslim building showing boulder foundation.
- VII. A. Muslim building showing two layers of rubble base for the floor.
B. Muslim building showing brick wall over boulder foundations and rubble base for floor.
- VIII. A. Corner of the Muslim building.
B. Pottery pit below the chunam-floor of Muslim building.
- IX. A. Muslim building : Chunam-floor with brick-bats (mark the partition line of rooms).
B. Muslim building : Foundation of Phase II made by breaking earlier chunam-floor.
C. Trench D4: Post-holes and remains of a charred wooden log.
- X. A. Mound Kdn. 2 : General view from south.
B. Mound Kdn. 2 : General view from west.
- XI. A. Site Kdn. 2, Trench A : Corner wall of a brick structure.
B. Kdn. 2, Trench C : General view of section showing the rampart.
- XII. General view of the rampart trench excavated by step-trenching.
- XIII. Section of rampart trench showing the sequence of layers.
- XIV. Section of Trench B3 showing sequence of layers and stratigraphy.
- XV. A. Kdn. 2 : Pavement of Satavahana Period.
B. Stone foundation of wall : Trench E.
- XVI. Soak pits : Trench C.
- XVII. Pottery types.
- XVIII. A. Painted Pottery.
B. Painted Pottery, Period I Chalcolithic.
- XIX. Painted Pottery of post-Satavahana Period.
- XX. Dish with Graffiti showing exterior and interior.
- XXI. Graffiti on Pottery (Types 1-34).
- XXII. Graffiti on Pottery (Types 35-55).
- XXIII. Decorated pottery—incised sherds.
- XXIV. Spindle whorls.
- XXV. Miscellaneous pottery—perforated sherds.
- XXVI. Decorated pottery—stamped and applique' decorations.
- XXVII. Pot-sherds with cloth impressions.
- XXVIII. A. Red-polished ware.
B. Russet-coated Andhra ware.
C. Shaped pot-sherds.
- XXIX. A. } Etched Carnelian beads.
B. }
- XXX. Carnelian beads.
- XXXI. Semi-precious stone beads.
- XXXII. A. Crystal beads.
B. Crystal objects.

- XXXIII. A. Agate lid.
B. Unfinished beads.
- XXXIV. A. Shell beads.
B. Steatite beads.
- XXXV. A. Terracotta beads.
B. Terracotta Ghata and Areca-nut shaped beads.
- XXXVI. Terracotta Figurines.
A. Ram.
B. Horse.
C. Elephant.
- XXXVII. A. Terracotta Figurines.
B. T. C. balls, spindles, ear plugs and a stopper.
- XXXVIII. A. Portions of Votive tanks.
B. T. C. skin-rubbers.
C. T. C. Finial (?).
- XXXIX. Terracotta Sealings, Bullae and a Die.
- XL. Coins.
A. Ancient coins from excavations.
B. Muslim coins (Surface finds).
- XLI. Copper objects.
- XLII. Iron objects.
A. Iron celt.
B. Iron billets.
- XLIII. Iron objects.
- XLIV. Iron objects.
- XLV. Bone objects.
A. Combs.
B. Stylii pins, nob, button and bead.
- XLVI. Shell objects.
- XLVII. Ornaments and Toilet Articles.
A. Jasper ear-ring and bone salaka.
B. Jasper ear ornaments and weight.
C. Glass ear ornament.
D. Jasper weight.
- XLVIII. A. Glass ear-reals (Mauryan).
B. Gold beads (Satavahana).
C. Glass beads.
D. Glass eye-bead (Mauryan).
E. Tortoise-shaped Amulet.
- XLIX. Grinding Tools.
A. Grinding slab of Period I Chalcolithic (?).
B. Short-legged quern, Period III Mauryan.
C. Legged quern, Period IV Satavahana.
- L. Neolithic celt and perforated hammer-stone.
- LI. Potsherds and casts having maize impressions at Kaundinyapura.
- LII. Micro-photographs of rice found at Kaundinyapura.
- LIII. Micro-photographs of seeds found at Kaundinyapura.
- LIV. A. Molar of elephant.
B. Crucibles.
- LV. A. Votive Tank from Kolhapur.
B. Votive Tank from Ter.
- LVI. Charred grains.

ANTIQUITY OF KAUNDINYAPURA

SITUATION

KAUNDINYAPURA (20° 55' N and 78° 05' E) in Chandur taluka of Amaraoti district is situated on the western bank of the Wardha river. It is 42 miles (= 48 kms.) to the north-east of Amaraoti and 6 miles (=10 kms.) due west of Arvi, a terminus on the Pulgaon-Arvi section of the Central Railway. On the opposite bank of the eastern side is Devurvada in the Arvi taluka. As it stands Kaundinyapura is now a very small village with a population of over 600. The place has a holy sanctity on account of the temple of Lord Krishna and his consort Rukmini in whose honour a large fair is held annually in the month of November.

ANTIQUITY OF VIDARBHA AND KAUNDINYAPURA

Kaundinyapura is one of the few fortunate places in India which retains its old name through centuries. Wardha (Varada) and the Vidarbha its tributary meet each other at Dharode, a village about 6 miles (=10 kms.) to the south-east of Kaundinyapura. From Dharode, the Wardha flows north-eastwards and both the rivers are mentioned in the Puranic lists.¹

The antiquity of Vidarbha in which Kaundinyapura is situated can be traced to the Brahmanas and Upanishads.

Vidarbha from ancient times formed part of the Dakshinapatha. The *Aitareya Brahmana* alludes to Bhima, a King of Vidarbha at the time of Nagnajit, a King of Gandhara.²

The country of Vidarbha is mentioned in the *Jaiminiya Brahmana*, II, 440.³ It was famous for its Machalas, i.e., dogs who killed tigers.⁴ The *Satapatha Brahmana* also mentions Vidarbha as a country.⁵

The *Prasna Upanishad*, I, 1, II, 1 mentions a sage from Vidarbha named Bhargava, as a contemporary of Asvalayana.⁶ Another sage called Vidarbhi Kaundinya is mentioned in the *Brihadaranyaka Upanishad*.⁷

¹ वेदस्मृतिर्नर्मदा च वरदा सुरसा शिवा ।

तापी पयोष्णी च सरयूः कावेरी गोमती तथा ॥

ऋषिकुल्या च कावेरी मर्च्यगङ्गा पयस्विनी ।

विदर्भा च शतद्रुश्च नद्यः पापहराः शुभा ॥

—*Garuda Purana* (Bangavasi Edn.), I, ch. 56, 8, 10.

The नलचम्पू 6.66 states

वीरपुरुषं तदेतद्वरदातरं नामकं महाराष्ट्रम् ।

दक्षिण सरस्वती सा वहति विदर्भा नदी यत् ॥

² एतमु हैव प्रोचतुः पर्वतनारदौ सोमकाय साहदेव्याय सहदेवाय साङ्गी जयाय बभ्रवे देववृद्धाय भीमाय वैदर्भाय नग्नजिते गांधाराय ।

—*Aitareya Brahmana*, VII, 34.

³ Cf. *Vedic Index*, II, 297.

⁴ *J.A.O.S.*, 19, 100.

⁵ *Satapatha Brahmana*, 14, 5, 5, 22.

⁶ Cf. Rayachaudhuri, *P.H.A.I.*, p. 86.

⁷ *Vedic Index*, II, p. 297.

According to early traditions Agastya had established his *asrama* in the Vindhya, who subdued that range of mountains. Agastya started his journey towards the South and in this connection the Rigveda mantras, 1, 179, 4, mention his marriage with Lopamudra, a daughter of King Nimi of Vidarbha.¹ According to other accounts she was the daughter of King Vidarbha, one of the sons of Vrishabha, after whom the region was named as Vidarbha.²

As a people the Vidarbhas are mentioned in several Puranas and are coupled with the Dandakas. They are known *Markandeya Purana*,³ *Vayu Purana*,⁴ *Matsya Purana*,⁵ and the *Vamana Purana*.⁶ The last one gives a variant Vedabho which has to be considered in the light of the Buddhist Jataka called the *Vedabha Jataka*⁷ (No. 48) which has a reference to the Vedabbha charm.

In the *Skanda Purana*,⁸ *Maheshwara Khanda*, *Kumarika Khanda*, ch. 39, vv. 127 ff. the number of villages in the Vidarbha (wrong for Vidarbha) is stated to be five lakhs.

According to the Epic tradition the Vidarbha country was divided into several kingdoms. King Vidarbha son of Jayamagha had three sons, Kratha, Kausika and Lomapada. The Vidarbha region was separated as Kritha, Kausika etc., and as such appears to be the first division of the country.⁹

The *Mahabharata* narrates the story of Bhishmaka, the King of Vidarbha, whose daughter Rukmini was carried off by Lord Sri Krishna. It is for this legend and these sacred associations that Kaundinyapura is known to people even to this day. The events relating to Rukmini are narrated in the Udyogaparva. The story is narrated by the *Bhagavata* later and forms the kernel of many a Kavya by mediaeval and modern Marathi poets.

The gist of the story is that Bhishmaka had a daughter by name Rukmini who was forcibly to be married to Sisupala. The marriage was arranged by Rukmi, the son of Bhishmaka. Rukmini wanted to choose Lord Krishna in the Svayamvara. When the marriage party had assembled in the pendal, the princess had arranged that she should be taken away by Lord Krishna from a temple outside the city, where she had gone on the pretext of worship. Rukmi, on hearing about the arrival of Lord Krishna and his secret designs decided to give a battle at a little distance from the temple. He had made a vow that he would not return till the defeat of Lord Krishna and consequently decided to stay at Bhojakata which he made his second capital in Vidarbha.¹⁰

¹ *Mahabharata*, Anu-sasana-parva, 137.

² *Ibid.*, 5, 4, 10.

³ *Markandeya Purana*, Adhyaya 57; Agrawalla, V. S., *Markandeya Purana*, Ek Samskritik Adhyayana, p. 151.

⁴ *Vayu Purana*, 94.52; 95.18; 96.1-2.

⁵ *Matsya Purana*, 43.48; 44.46-48.

⁶ V. S. Agarwalla, *Vamana Purana*, a study, p. 32.

⁷ Fousboll, *Jataka*, Vol. I, pp. 253-256.

⁸ Cited by D. C. Sircar, *Studies in the Geography of Ancient and Mediaeval India*, p. 204.

⁹ *Harivamsa*, 1, 36 and *Narada Purana*, 1, 9, 63.

¹⁰ रुक्मिण्यां हरणं वीरो वासुदेवेन धीमता ।

कृत्वा प्रतिज्ञां नाहत्वा विदतिष्ये जनार्दनम् ॥ ११ ॥

व्यसितो वीडीतो राजन् नाजगाम स कुंडिनम् ।

तथैव कृष्णेन रणे निर्जितः परवीरहा ॥ १४ ॥

तत्र भोजकटं नाम कृतं नगरमुत्तमम् ।

सैथेन महता तेन प्रभत गजवाजिना ॥ १५ ॥

पुरं तद् भुवि विख्यातं नाम्ना भोजकटं नृप ।

स भोजराजः सैथ्येन महता परवारितः ॥ १६ ॥

— *Mbh. Udyoga Parva*, ch. 157.

Another legend from the epic associated Kaundinyapura with Nala and Damayanti. Bhima, the King of Vidarbha, is said to have been blessed by a Rishi called Damana and had a daughter named Damayanti. She was married to Nala, King of Nishadha. The episode of Nala and Damayanti is too well-known and has been the theme of several Kavyas even to the most modern times. All these may not be taken stock of here but it is sufficient to recall that the episode first appears in the *Nalopakhyaṇa of Mahabharata, Vanaparva*, 60, 73, 77.

The epic gives a graphic description of the marriage, how King Bhima arranged for the marriage¹ and how the streets in the city of Kaundinyapura were decorated.²

The episode of Nala-Damayanti is again the subject of a Mahakavya by Sri Harsha³ entitled *Naishadha Charita* composed about 8th century A.D.

The city of Kaundinyapura is also mentioned as the capital of Bhima, son of Chitrāsena who had a son called Rukmangada from the blessings of sage Visvamitra.⁴

It may be noted in passing that Indumati, wife of Aja, mentioned in the *Raghuvamśa* was also a princess of a Vidarbha king.⁵

Leaving aside the celebrities which have played so vital a role in the traditional literature of India, one has to confess that the material for the reconstruction of the most ancient History of Vidarbha is knitted in slender fibres of legend and folklore.

As already narrated, Vidarbha appears to be one of the earliest settlements in the south since it is connected with Agastya. The Kratha-Kausika complex equates it into two separate divisions made by the river Varada and as will be noticed later, the Vidarbha still has an important role to play in this respect on account of the various cultural traditions at variance with each other in the two separated parts. Bhojakata and Vatsagulma appear to be amongst the regions into which Vidarbha was further divided. But about these we shall speak later in proper context.

As a people, the Bhojas of the Vidarbha were related to the Satvatas. It is stated in the Puranas that the Sātvatas and the Bhojas were the off-shoots of the Yadu family of Mathura on the banks of Yamuna.⁶ We are further told that they were kindreds of the southern realm of the Vidarbha.

¹ ततो विदभान् संप्राप्तं सायान्हे सत्यविक्रमम् ।
ऋतुपर्णं जना राज्ञे भीमाय प्रत्यवेदयन् ॥ १ ॥
स भीमवचनाद्राजा कुण्डिनं प्राविशत पुरम् ।
नादयन्नथ घोषेण सर्वाः स विदिशा दिशः ॥ २ ॥

— *Mbh. Vana Parva*, ch. 71, 1-2 (Nirnayasagar, 1908)

² अशोभयन् नगरीं पताका ध्वज मालिनम् ।
सिक्ताः सुमृष्ट पुष्पाठ्या राजमार्गाः स्वलङ्कृताः ॥ ७ ॥
द्वारिद्वारिच पौराणां पुष्पभङ्गः प्रकल्पितः ।
अचित्तानी च सर्वाणि देवताय तनानिच ॥ ८ ॥
ऋतुपर्णे गते राजश्रेला राजा विशांपते ।
नगरे कुण्डिने कालं नातिदिर्घमिवावसत् ॥ २० ॥

— *Mbh. Vana Parva*, ch. 75, 7-8, 20 (Nirnayasagar, 1908)

³ *Naisadhacharita* (Ed. by Handiqui), Deccan College, Poona, 1960.

⁴ *Ganesha Purana*, 1, 19, 27.

⁵ *Raghuvamśa*, 7, 1.

⁶ *Matsya*, 43, 48; 44, 46-48; *Vayu*, 94, 52; 95, 18; 96, 1-2; *Vishnu*, IV, 13, 1-6.

It is natural that the Bhojas should be remembered here in connection with the Bhojikas mentioned in the Asokan inscriptions.¹ The Vidarbha country is therefore called Bhojakata, the Country of the Bhojas.²

Actually, a place called Bhojakata has been mentioned in the *Mahabharata*,³ as the capital founded by Rukmi and it similarly finds mention in the *Harivamsa*.⁴ Bhojakata is mentioned in the inscriptions at Bharhut in the Sunga Period.⁵

As well shall see later the Chammak Plates⁶ refer to the Bhojakata region. The point is further settled by antiquarian remains of an equable period like that of Kaundinyapura⁷ being found at Bhatkuli, about 16 miles north-east of Amaraoti.

In some works Vidarbha is said to have extended upto Rewa in the north and Godavari to the South. According to *Kautilya's Arthasastra*,⁸ the Nimi Janapada or a part of it was known as Sabharashtra. Vidarbha appears amongst the countries subdued by the Satavahana ruler Vasisthiputra Pulumavi.⁹

According to *the Kamasutra of Vatsyayana*,¹⁰ Vidarbha appears to have been separated from Vatsagulma as they are mentioned independently of each other. Vatsagulma, identified with modern Washim, became the capital of a branch of the Vakatakas.

The History of the inter-regnum between the Satavahanas and the Guptas is very obscure. It would appear from the Belora¹¹ Plates issued in the 11th regnal year of Vakataka Pravarasena II that this region was under the Vakatakas in circa 420 A.D. The Belora Plates were issued from Nandivardhana (modern Nagardhan, near Nagpur) which is nearly 50 miles from Kaundinyapura, the ancient capital of the Vidarbha. But more definite evidence is obtained in his Chammak Plates¹² issued in his 18th regnal year which refer to the Bhojakata region. The plates record a donation of Charmanka (=Chammaka) situated on Madhunadi (modern Chandrabhaga) nearly 30 miles south of Kaundinyapura. For this period we have also important reference to Vidarbha in the *Brihatsamhita of Varahamihira*¹³ as situated in the S. E. direction.

According to *Sakti-sangama-tantra*¹⁴ (Book III, Ch. VII), in the *Shat-panchasat-desa-vibhaga*, the country of Vidarbha is stated to be situated to the east of Bhadrakali, and to the west of Ramadurga or with Ramadurga to its west. The latter has been identified with Ramdurg in the Belgaum district and the location may be taken in a general way.

¹ R. E. XIII, mentions Bhoja-Pitinikas.

² Kalidasa in *Raghuvamsa* (V, 39-40). Significantly the King of Vidarbha is called a Bhoja.

³ *Mahabharata Vanaparva* (157, 15-16).

⁴ *Vishnupurana* (60, 32).

⁵ Cf. Barua & Simha, *Bharhut Inscriptions*, pp. 7, 27; *Luders' List*, Nos. 723, 861.

⁶ Chammak Plates, *C.I.I.*, III, p. 236.

⁷ Information from Dr. Mrs. Sobhana Gokhale of the Deccan College, Poona.

⁸ *Kautilya's Arthasastra*, 2-11-37.

⁹ *Luders' List*, No. 1123; *Epi. Ind.*, VIII, p. 60ff.

¹⁰ D. C. Sircar, *op. cit.*, p. 157.

¹¹ *Epi. Ind.*, XXIV, p. 260.

¹² *C.I.I.*, III, p. 236.

¹³ शौलिक विदर्भवत्सान्धचेदिकाश्वोर्ध्वकण्ठाश्च। *Brihatsamhita*, XIV, 8.

¹⁴ भद्रकाली महत्पूर्वं रामदुर्गाश्च पश्चिमे,
श्रीविदर्भाभिधो देशो वैदर्भी तत्र तिष्ठती।

Cited by D. C. Sircar, *op. cit.*, pp. 75, 90.

From the finding of some coins of the Kalachuri ruler Krishnaraja, in the Amaraoti district,¹ it appears likely that the territory passed on to the Kalachuris. A king called Svamiraja, whose plates were discovered at Nandivardhana,² near Nagpur, is believed to be a vassal of Kalachuri Krishnaraja (550-575 A.D.).

The region subsequently passed into the hands of a branch of the Rashtrakutas. The Sanglood Plates³ (Saka 615) and the Multai Plates⁴ (Saka 631) of Nannaraja Yuddhasura indicate that the country passed through many vicissitudes. The region ultimately came under the Rashtrakutas of Manyakheta. We have several records of Govinda III which show that he had established control over the region around Kaundinyapura. His Anjanavati Plates⁵ (Saka 722) refer to certain villages which are in close proximity to Kaundinyapura. The Jharika grant⁶ (Saka 725) registers grants from villages on the banks of the Wardha river. The Sisvai⁷ (Saka 729) and the Lohara (Saka 734) grants were discovered in Vidarbha though the places mentioned in them are situated quite far off from their findspot. But from the Deoli grant⁸ of Krishna III Govinda's successor, issued in Saka 852 we find that the region was directly under the Rashtrakuta rulers. The plates were issued from Nagapura-Nandivardhana and mention the Kanhan river, not very far from the Kaundinyapura region.

Trivikrama Bhatta, the author of Nala Champu,¹⁰ was probably a poet born in Vidarbha. In his Champu-Kavya he is very eloquent about the Varada and the Payoshni rivers and very rightly chooses the Nala Episode as the theme for his Kavya. He is believed to have flourished during the reign of Rashtrakuta Indra II (A.D. 915-928) and is probably the composer of the Bagumra Plates¹¹ (Saka 836) of that ruler.

In about 933 A.D. it appears that there was a battle between the Rashtrakutas and the Kalachuris at or near Achalapura, on the banks of the Payoshni river.¹² It is suggested that possibly this incident is narrated in the Viddhasalabhanjika¹³ of the poet Rajasekhara.

In some records¹⁴ of the Panduvamsis of Mahakoshala it is stated that the extent of the kingdom of a vassal of Nannaraja stretched as far as the banks of the Varadā river.

We have very little evidence about the political life of Vidarbha after the downfall of the Rashtrakutas and the rise of the Yadavas of Devagiri. Though the whole of the Buldhana and the Akola districts are full of Yadava temples, the remains of this period in the Akola and the Amaraoti districts are comparatively very few. But about 2 miles to the

¹ From Dhamoni, District Amaraoti. Cf. *J.N.S.I.*, III, p. 24.

² *Epi. Ind.*, XXVIII, 1-11.

³ *Epi. Ind.*, XXIX, pp. 109-115.

⁴ *Ind. Ant.*, XVIII, p. 230 ff.

⁵ *Epi. Ind.*, XXIII, pp. 8 ff.

⁶ *Epi. Ind.*, XXXII, pp. 157-164.

⁷ *Epi. Ind.*, XXIII, p. 204 ff.

⁸ *Epi. Ind.*, XXIII, p. 212 ff.

⁹ *Epi. Ind.*, V, p. 188 ff.

¹⁰ Nirnayasaragar Edition (Bombay 1931).

¹¹ *Epi. Ind.*, IX, p. 29 ff. Cf. *J.B.B.R.A.S.*, 18, p. 257.

¹² Cf. Mirashi, *Samshodhana Muktavali*, I, p. 195; *I.A.*, LXII, 35.

¹³ *Ind. Ant.*, LXII, p. 35ff.

¹⁴ Senkapat Inscription (line 6). *Epi. Ind.*, XXXI, pp. 31-36.

east of Kaundinyapura¹ there is a small dilapidated Yadava temple which confirms the extent of the rule of this dynasty. Inscriptions at Amdapur (Saka 1133),² at Nandgaon (Saka 1177),³ at Markandi⁴ and in the Ramtek temple⁵ itself show that the territory was well within the sway of the Yadavas till the last. The Ambe inscription (No. 2) indicates⁶ that Trivikrama, father of Kholesvara, a brahmin general of Ramchandra was an ornament of Udumbarapankti *i.e.*, Amaraoti. Kholesvara built a Vishnu temple at Achalapura *i.e.*, modern Ellichpur. He also established Khollapura (modern Kholāpura near Amaraoti) on the banks of the Purna. He is stated again to have established an argrahara on the banks of Varada which was named as Varanasi.

Bopadeva,⁷ a dependant of Hemadri, the well-known writer on Dharamasastra is stated to have been born in the village Vedapada situated on the banks of the Wardha. His Muktapala was commented upon by Hemadri himself and it informs us that Bopadeva was a writer of 26 works on Vyakarana, Astrology and religion.⁸

The present Vidarbha region is known for two ancient styles in Kavya, one named after the region and the other after a well-known capital. The first is the Vaidarbhi Riti and the other Vachchhomi, after Vatsagulma (=modern Washim). Both these are highly praised by the Classical poets who themselves composed in these charming styles. As the subject does not directly relate to antiquities, it has not been considered to elaborate on these in detail. Similarly references to modern and Mediaeval Kavyas dealing with the Nala Episode have been dropped. They contain much imagination in respect of the descriptions of Kaundinyapura and its environs. It may be mentioned however that only one late work refers to Kaundinyapura as fortified and as situated in between two river streams.

The Jaina sources which are prolific in borrowing from Epic Literature contain several references to the Rukmini legend. Thus *Vasudeva Hindi*⁹ refers to Ruppini, daughter of Bhesaga of Kundinipura of Viyabha, who gave birth to Pajjumna (Pradyumna). The *Thananga Sutra*, 8-626, also alludes to this.¹⁰

Kodinna or Kundin as a city is mentioned in *Nayadharma-Katha*¹¹ where King Ruppi is said to have ruled. *Panha vagarana Tika*, 4, p. 87a, also alludes to this fact.¹²

¹ *Amaraoti District Gazetteer*, p. 389.

² *Epi. Ind.*, XXI, p. 127.

³ *Epi. Ind.*, XXVII, p. 9 ff.

⁴ Cunningham, *ASI*, IX, 143-149 ; *BISMO*, XIX, pp. 85-88.

⁵ *Epi. Ind.*, XXV, 1.

⁶ Khare, G. H., *Sources of Mediaeval History of the Deccan*, I, 56.

⁷ *Muktapala* by Bopadeva. (Calcutta Oriental Series No. 9, 1920).

⁸ यस्य व्याकरणे वरेण्यघटनाः स्फीताः प्रबन्धा दश प्रख्याता नव वैद्यकेषु तिथिनिर्धारार्थमेकोद्भूतः । साहित्ये त्रय एक भागवत तत्त्वोक्तै त्रयस्तस्य च भृगीर्वाण शिरोमणेरिह गुणाः के के न लोकोत्तराः colophon at the end of मुक्ताफल.

⁹ *Vasudeva-hindi*, pp. 78, 82, 94, 98 etc.

¹⁰ Jain J. C., *Life in India as depicted in the Jain Canons*, p. 389.

¹¹ *Nayadharma-Katha* (Ed. Vaidya), p. 178.

¹² Jain, *op. cit.*, p. 298.

THE EXCAVATIONS, STRATIGRAPHY AND CHRONOLOGY

GEOGRAPHICAL SITUATION

THE situation of Kaundinyapura on the geographical map of Vidarbha is very interesting. Kaundinyapura stands on a high eminence on the northern bank of the Wardha river. The mounds of Kaundinyapura are partly natural and partly formed of the cultural debris which has accumulated there for centuries. The ancient history of the place as narrated in the ancient Indian literature has already been dealt with (ante, pp. 3-6) and it now remains to see how from its geographical position this place was immensely suitable to become the capital of Vidarbha.

The river Wardha, on the banks of which Kaundinyapura is situated, rises in the Multai plateau of the Betul district, about 70 miles N.W. of Nagpur. After flowing for a distance of nearly 32 miles in the east-west direction it takes a sudden turn towards the south, near Morshi, where it is joined by the river Madu from the adjoining Salbardi Hills. Leaving the alluvial tract of the Nagpur region it now enters the trap area extending over 50 miles and now forms the natural boundary between the Wardha and the Amaraoti districts. In ancient days this portion of the Wardha river was supposed to separate the Central Provinces (Nagpur region) from the Berar (Vidarbha). Being well watered by the rivers Chudamani and Bel, the entry of the Wardha near the town of Morshi is said to be very forceful, cutting a hillock almost into two, and the stream in the trappy bed gushes in torrents throughout the area, dividing itself into many channels and small islets in the bed of the river. The island at Kaundinyapura and at Ballarpur near Chanda, as the river flows further, are a curious feature of the Wardha system.

A little above the village of Kaundinyapura, the Wardha forms itself into two channels and the small islands in between them contain many fertile fields which are under active cultivation even to this day. A portion of this streamlet now forms the northern boundary of the village and exposes the bed-rock at several places in the northern and eastern peripheral regions. A study of the contour map shows that in ancient days a branch or the ancillary course of the river ran parallel to the main stream for nearly six furlongs, encircling the present village and the high mounds in its vicinity. Clear traces of the old stream are seen near the Devi temple, the western ridge of the Bhim Tekdi and in a section near the slope of the mound designated as Kdn-2. Though no gravel was anywhere exposed on the western side of the ancient mounds being hidden by thick deposits of washed alluvium, the river channel gets swollen every year during the monsoon, and leaves the village virtually turned into an island atleast for a few days in the season. As will be shown later, the excavation of mound Kdn-2 showed distinct traces of a mud fortification on the eastern side which was possibly intended to check the onward flow of the river and the belief is further strengthened by the layout of the mounds at Kaundinyapura in the north-south direction. The east-west expansion of the ancient city was probably limited by the presence of the ancillary channel and it was this 'island' like position of Kaundinyapura which must have led to the choice of this place as an ancient capital of Vidarbha. Proximity of the river which virtually justifies its ancient name Varada or the 'giver of blessings' from the rich crops which grow around, the naturally fortified place as sandwiched between two streams and the fertile tracts around, fully justify the selection, both in ancient and mediaeval times.

The topography of the ancient remains at Kaundinyapura may now be described as follows: As already stated above the precincts of Kaundinyapura begin with a small

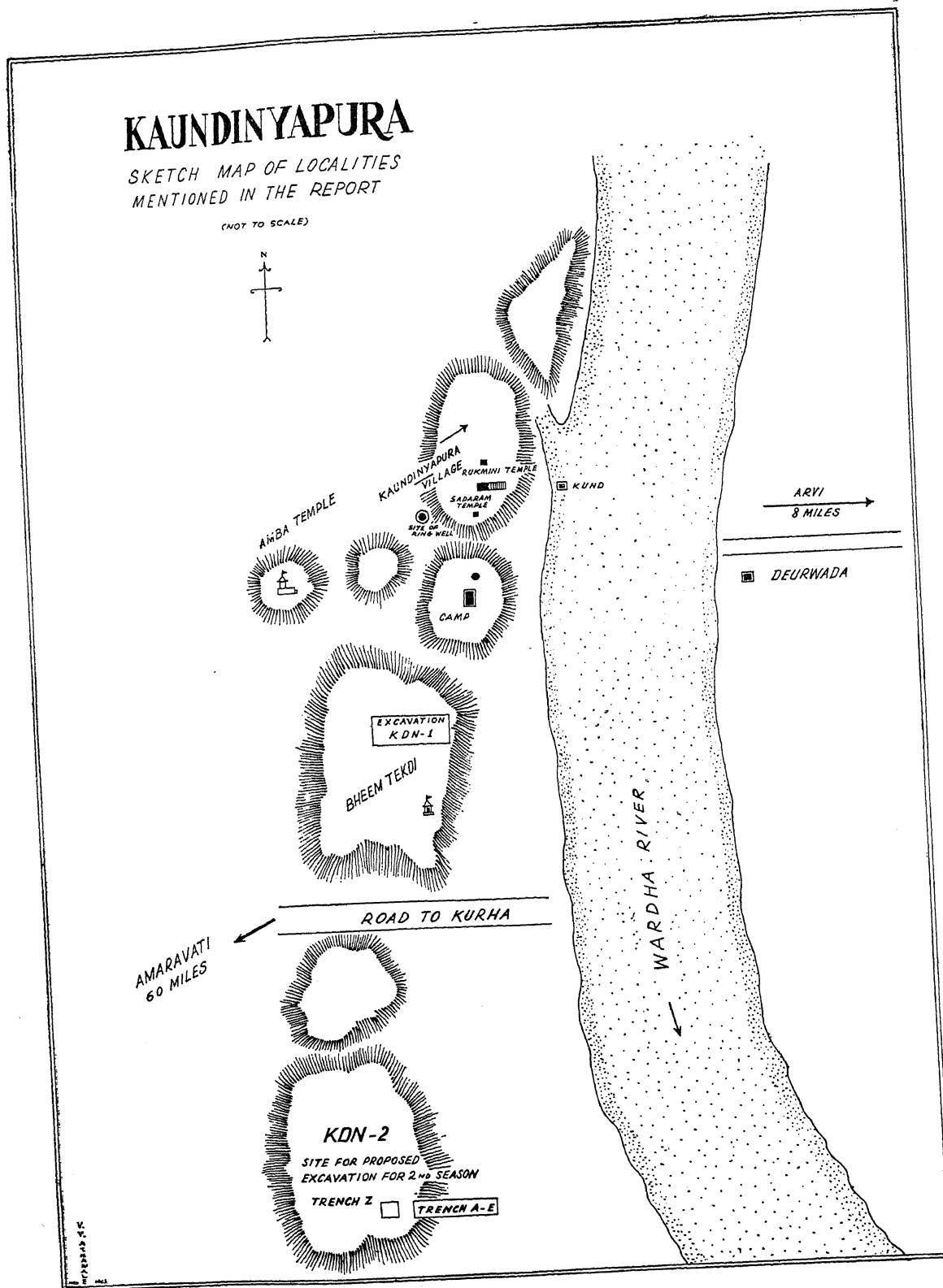


Fig. 1
 Sketch map of localities mentioned in the report

island to the north of the present village (Fig. 1). After crossing a small streamlet one reaches the northern periphery of the village which is marked by a high eminence from the surrounding plains. Though searched for any ancient remains the banks of the stream did not yield any antiquities and were mainly strewn with modern potsherds and other debris. We were told that in ancient times a small wall or a Kot surrounded the northern boundary of the village but our search for it was in vain, the structures (if any existed) being all washed away in a heavy flood some years back. The northern end of the village is capped by many small huts which conceal ancient debris beneath them but there was no suitable open space left in the village where we could check the evidence. Immediately behind the cluster of the huts we came across two or three large houses or *wadas* belonging to the former Malgujar or the proprietor of Kaundinyapura. These are substantial structures mostly modelled after the enclosures of the Maratha Period, having heavily timbered high gateways with a small open enclosure or courtyard behind; an *Oti* or sitting space in front of the house and living rooms at the back and another back-yard in the rear. These *wadas* are well guarded by high mud brick walls. In the courtyards of these are invariably found large underground receptacles or store houses for grain, which are quite commodious and have a large storing capacity. These *Pevas* or granaries can comfortably accommodate the grain necessary for the entire village for a year or so and were opened in old days only once in a year for the storage of fresh grains or occasionally in times of difficulty. The mouths of these are generally circular in shape and were sealed by placing a large cart wheel at the orifice plastered with mud. Some of these storages extend and occupy several hundred feet of floor-space underneath the ground and it is said that most of the northern part of the village is occupied and interspersed with such *Pevas*. The practice of storing grain in this fashion in the normal course or for difficult times was in vogue in many parts of Maharashtra, particularly in the Ahmednagar, Sholapur and Khandesh districts and portions of Marathwada. It is also known from Buldhana, Akola, Wardha and Amaraoti districts of Vidarbha. This method of storing grain, particularly the staple crops like jowar, bajri, gram and linseed was necessitated by the frequent famines and fear of invasion in Maharashtra in Muslim-Maratha times. On the southern side of the large mansions of the Malgujar and overlooking the banks of the Wardha stands the Rukmini Temple for which Kaundinyapura is so well-known. The temple has undergone several repairs from time to time and there is hardly any portion of it which can be called as ancient or even old. The temple proper is a comparatively small enclosure and contains idols of Bhishmaka and his wife, parents of Rukmini, dressed in the traditional Kunbi style with a heavy turban and a sari and choli, respectively. In one of the corners is embedded a mediaeval image of Narasimha (?) kept on a pedestal which probably forms part of a pillar of the Yadava order current in Maharashtra in 11th-13th century A.D. and is probably the only piece connected with the temple which has any semblance of antiquity. The Sabha-mandapa of the temple has several 'samadhis' of various religious persons connected with the temple and local luminaries. The entire surroundings of the temple have recently been renovated to suit the requirements of a religious fair which is annually held in the month of Kartika in honour of the temple-god. In view of the large number of pilgrims participating in the fair elaborate arrangements have been made to accommodate them in a large sized Dharmasala in the rear of the temple and by enlarging the compound of the original temple itself. In so doing it is reported that a very large area in the vicinity had to be cleared which has resulted in the finding of several objects of antiquarian interest, but these were not attended to and had little significance to the villagers. It is reported that at least three stone slabs bearing Devanagari inscriptions were discovered in this process of clearance ; but only one of them has now been embedded near the

northern entrance to the temple. This inscription, which consists of 11 lines in Nagari characters of about 15th-16th century A.D., is unfortunately too much abraded as to make any cogent sense of the text, but appears to have some connection with a samadhi. The main entrance to the temple is on the east overlooking the river and is adorned with a Deepamala or a lamp-post erected over the doorway. Being whitewashed with chunam annually at the time of the fair it gives an imposing appearance to the river-front but there is hardly anything in it which has any architectural merit. (Pl. II.A). It is, however, a very prominent landmark in the village as it can be seen over a long distance. The temple very nearly stands on the river bank but in order to facilitate some religious functions connected with the worship of the deity, the slope from the main entrance reaching the river-bank has been paved with a long flight of steps called Ghat, constructed during recent years. At the end of the Ghat and in the river-bed is constructed a small square Kunda (Pl. III) which is considered to be of great sanctity by the visiting pilgrims. The enclosure is constructed of large dressed stone blocks and contains in it several stone images, mostly in fragments, which were found while the ghat was being constructed. A fragmentary Nandi, a figure of Vishnu, Surya and Bhairava are some of the images which can be identified; but they are much weatherworn and do not claim a very high antiquity. On stylistic grounds these can be referred to the late Mediaeval Period (circa 14th-15th century A.D.). The only complete stone sculpture found in this debris was the Kesava form of Vishnu, which has now found place in the compound of the Dattatreya temple in the vicinity of the Rukmini temple. This image about 3'6" high, is very delicately carved and has on its Prabhavali the ten incarnations of Vishnu portrayed in the traditional style. Like the other images in the Kunda this sculpture also belongs to the same age. Though preserved intact modern enthusiasm and taste have totally disfigured this excellent piece of art by daubing it with cheap bright paints and in trying to make it more 'attractive'.

At the immediate back of the Rukmini Temple, in an open courtyard of a school compound can be seen some traces of hard chunam floor, which on the analogy of similar floors encountered in the excavation of the Bhim Tekdi (see below pp. 14-17) can only form part of a large sized building of the Muslim Period. The pebble-floor set in chunam is comparable to the palatial building uncovered in the Bhim Tekdi and on account of its extent and the hardness of the floor, it is perhaps the only open space in the village of Kaundinyapura which can be tapped with fruitful results. This floor is approximately on the same level as the buildings on the opposite side on the Bhim Tekdi. On the southern side of this 'floor' one can see large blocks of stones and brickwork lying scattered on the slope of the mound; and it can be surmised that the building in its close vicinity was once very heavily fortified. These were the only visible remains in the village of Kaundinyapura which can claim some antiquity excluding of course the stone sculptures just described.

To the south of the Rukmini temple and next to it stands an elaborately constructed modern structure enshrining the Samadhi of Sadaram-Baba, a local saint who died about 225 years back. He was venerated for his miraculous powers. A local *Mahatmya* glorifying the sanctity of Kaundinyapura, composed during recent years narrates several anecdotes regarding this saint but is of very little or no use to the students of history.

A modern road and rain-gully formed close to it marks the southern periphery of the Kaundinyapura village or the Kaundinyapura mound. Not very far from the road and at the head of the gully is another important landmark, viz., a temple of Devi which

is closely associated with the destiny of Kaundinyapura. The Devi Temple (Pl. IV.A) is perched on a small hillock, apparently an ancient mound, and lies at a distance of nearly a furlong on the south-west of the Rukmini Temple. It was from this temple that Rukmini of the Epic fame is traditionally believed to have eloped with Lord Krishna and as such it is much venerated. The present temple is comparatively a small structure, simulating the Tughluq style of buildings, and is of recent date in construction. Its white-washed walls and the tall Ghumbaz are seen from long distance in the vicinity and attract many a pilgrim. The temple has been renovated several times and there is hardly a portion of it which can be called ancient or even mediaeval. The shrine contains an image of Devi, of little or no artistic merit, and does not seem to be of any great age, though the tradition associates it with the deity worshipped by Rukmini at the time of her proposed and foiled marriage with Jarasandha. The temple is very pretty in its surroundings clustered with a net work of a number of streamlets which flow eastwards to join the Wardha. The pleasing surroundings have an additional charm in having a small garden at the foot of the temple hill, which is watered by a well close by. This well, we are told, is formed by deepening a small ring-well which was discovered quite accidentally when the garden was being laid. It still supplies good drinking water to the people in the vicinity.

THE SOAK-WELL

(Plate V)

It has already been mentioned that the recent formation of a rain-gully, starting from near the Devi Temple and joining the Wardha near the ghat, has separated the Kaundinyapura village from the Bhim Tekdi and other satellite mounds. During the monsoon this gully overflows with water and consequently much silt and sand gets deposited at its base. When our excavation was in progress, a small patch of brickwork came to our notice in the southern ridge of this gully and with a view to ascertain its nature it was decided to clear the debris in which the structure was embedded. The task was comparatively very easy and we were able to expose the remains of a soak-well, about $4\frac{1}{2}$ metres high and 4 metres in diameter. Much of the brickwork at the top of this soak-well had vanished but only 31 courses of the shaft were left in a loosely bonded condition. The clearance showed clear traces of the foundation trench which was laid by cutting through several layers of alluvium, sand and kankar-like murrum and dug up to the natural soil. The bricks employed were wedge-shaped, about 35 cms. on the broadside, 26 cms. towards the thinner end and about 20 cms. in thickness. About 16 bricks were required to complete the circumference of the well. Though exposed to the natural soil till the last brick-course appeared, this soak-well was not opened completely to ascertain the contents. Its use as a rubbish pit was quite clear from many examples known from several sites in India. As a result of long sippage of water and dirt, large portions of the shaft were covered with greenish patches and fungi characteristic of such wells, and had even contaminated the natural soil around.

During our preliminary survey of the Bhim Tekdi in February 1960, hollow shaft of another soak-well was noticed by us on the western slope of the mound but was sadly wrecked at the time of the excavation. Kaundinyapura thus had at least three soak-wells, two of which could be examined properly. From the stratigraphical position both these wells could be attributed to Period IV and assigned to about 100-200 A.D.

The practice of sinking soak-wells and the use of wedge-shaped bricks is no longer in vogue in Maharashtra. Analogues known from Nasik,¹ Karad² and other places in Maharashtra generally confirms the Satavahana date arrived at for the Kaundinyapura examples. In addition to the excavated examples we have at Nasik some clear examples of old soak-wells being re-used for drawing water as at Kaundinyapura. As these soak-wells are invariably sunk deep enough to reach the natural soil, a rise in the watertable often ensures a good supply of clear drinking water from these and though used as water-wells at a later period it is by no means true to say that they were originally devised with that purpose in view. It is also not true to say that the soak-wells were intended for storing grain (Ganda-Kusula) as some writers have likened us to believe.³ The question about the exact use of such soak-wells has been dealt with at length by me in my *Explorations at Karad*, pp. 11-14. From the large network of these found at various sites within a very close proximity from each other it is shown that they could have served no other purpose than for the easy disposal of sewage water.

The soak-wells in India generally fall under two distinct types—(I) Those lined with masonry ; and (II) those lined with pottery rings. In the excavations at Tripuri, both these types of soak-wells were encountered and in a discussion thereon I have shown⁴ that the pottery soak-wells precede the masonry ones. This has since been corroborated at Hastinapura where the same sequence has been obtained. Pottery wells of Type II are encountered there towards the close of Period III (*circa* early 6th cent. B.C. to early 3rd cent. B.C.) when the brick-lined ones just started making their appearance and became quite common in Period IV and even in Period V.⁵ This sequence is also observed at Rupar, in the Ambala district, where pottery ring-wells are attributed to Period III (Mauryan and Early) whereas the brick-lined ones occur at a later phase.⁶ These examples also confirm the general dating for the soak-wells in India, which fall within a range of *circa* 300 B.C. to 200 A.D. for Type II and a late date for Type I.

The isolated Temple-hill is met on its eastern side by another large artificial hill called the Bhim Tekdi by the crossing of a small nullah and the road leading towards Kurha from the Kaundinyapura village. This mound is also called Dahi Handichi Tekdi because it is used by the villagers for the Dahi Handi ceremony annually. It is celebrated every year on the eve of the Gokul Ashtami day when a large pot containing curds is hung in between two large poles and a competition is held to break the pot with small walking sticks or bamboos. The mound is roughly oval in shape, about 220 metres in length and about 108 metres in breadth. Lengthwise it runs roughly parallel to the river-bed and is separated from it by the high river bank of alluvium forming into a terrace about 15 ft. in height from the present water-level of the river. The mound slopes gently towards the south but its eastern and the southern ridges are fairly high being about 30 ft. above the surrounding plains. The mound is capped by three modern temples which are built by different sub-castes from the Harijan community. Only one of them is under worship but the two others attract large crowds during the annual Kartiki fair. The mound is bereft of any vegetation; a large tamarind tree is said to have once stood at its top but was struck by lightening some years back and a large ditch

¹ Sankalia-Deo, *Excavations at Nasik and Jorwe*, pp. 14, 23 and Pl. IV, a-d.

² *Explorations at Karad*, pp. 9-10, Pl. II.

³ V. S. Agrawala in *Journal of Indian Museums*, I, pp. 93-106.

⁴ Dikshit, M.G., *Tripuri*—1952, pp. 23-27.

⁵ Cf. *Ancient India*, No. 11-12, Pls. VIII, IX, X, XI and XIII, B.

⁶ Cf. *Indian Archaeology*, A Review for 1953-54, p. 7 and section on Pl. II.

KAUNDINYAPURA

(DIST:- AMARAVATI)
1962

PLAN OF
MUSLIM STRUCTURES ~

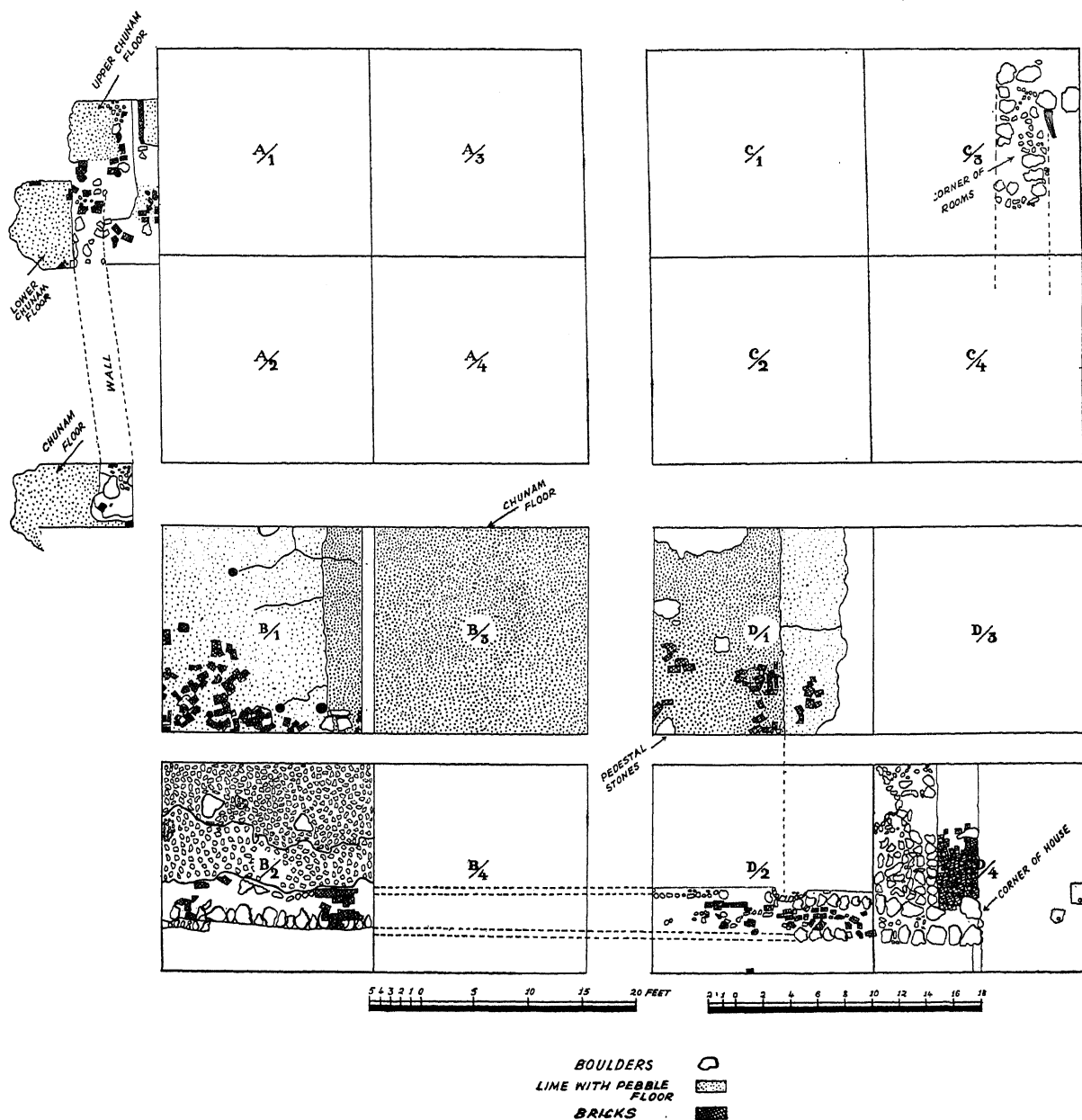
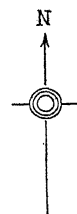


Fig. 2
Plan of structures : Muslim buildings

is shown to be the place where it formerly stood. During a preliminary survey of Kaundinyapura a large patch of Chunam work was seen on a small section exposed in the northern part of the mound; in view of the large open space which was available on the top, the Bhim Tekdi was selected as the venue of the excavations. The large flattish top on excavation was found to conceal beneath it a pebble-floor laid in chunam and formed part of a substantial building attributed to the Muslim period (Fig. 2). The results of the various cuttings in this mound are detailed below and formed the major bulk of the work in Kaundinyapura in the first season.

EXCAVATION OF B3 AND D4

After the remains of the Muslim buildings were exposed it was found that these occupied a major portion of the northern part of the mound and had virtually sealed all the occupational layers. It was evident that in order to uncover these, a portion of the gravel pavement as well as the 'floor' of the Muslim building must be broken into. We, therefore, selected squares B3 and D4 for this purpose. The selection of B3 was prompted by its central position in relation to the mound and its high eminence indicated that this was likely to be an undisturbed area. This unfortunately did not actually turn out to be so. A tamarind tree growing in the vicinity had left a large area in a disturbed condition and the root-lets had emerged deep into the soil. It did not, however, disturb the sequence of the underlying layers to a great extent. In fact, we did not dig below the area indicated by this tree. The other square D4 was selected as a cross-check on the results obtained in the main-dig in B3. We touched the natural soil in B3 only in view of the short season and in D4 we went sufficiently deep to reach the corresponding layers in B3 (Period II) though the natural soil was not touched.

EXCAVATION OF B3

When the floor of the Muslim building was broken into, it was found that in order to make the floor quite stable a number of large boulders were embedded in the earth with a small padding or layering of small pebbles over it (Plate VII.B). For the foundations, the stone boulders used were sometimes over 9"-1 ft. in diameter on an average but in places even extra large boulders were used. In the north-east corner of B3 it was noticed that a small pit (Pit A) was dug into the floor (Plate VIII.B) about 1½ ft. deep and about 3 ft. wide at the top. This pit contained fragments of over 70 vessels probably discarded after a dinner party. The vessels comprised of types 1, 2, 3, 6, 7d, 8a, 10, 16, 68, 69, 70, 71, 96. Out of these the Thavka (Types 1, 1a, 2) accounted for a large number. Types 3 and 3a accounted for four large vessels. The other vessels represented common drinking cups, saucers and culinary vessels like hundis, cooking pots etc., and included two basins with flaring sides (Types 3, 3a). The pottery types generally compared very well with those obtained in layers 1-3 though the assemblage was obtained below the foundations of the Muslim building. There was very little doubt about its association with the strata of the Muslim period.

Pit A was dug into layer 5 which comprised of a loose loamy dark-brown clay and had a number of shallow pits at its base. The pottery from this layer generally showed a very crude workmanship. It was ill-fired and introduced many new forms which were quite different from the Muslim pottery. This layer showed that the mound was generally level without any great disturbances. The pottery contained in this layer had an overwhelming majority of sherds which were treated with reddish chocolate slip.

THE EXCAVATIONS, STRATIGRAPHY AND CHRONOLOGY

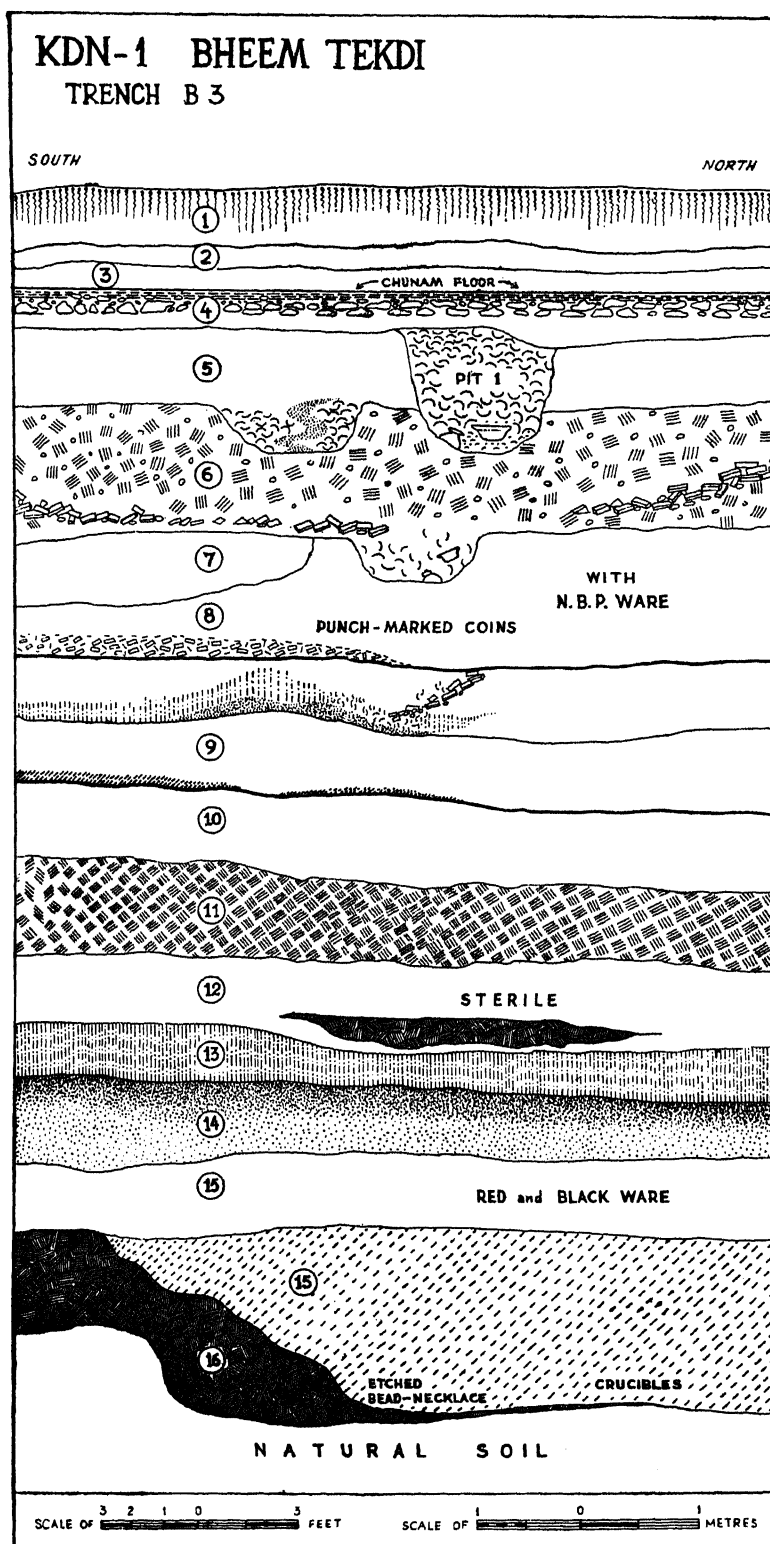


Fig. 3

Kdn-1 : Bhim Tekdi : section of Trench B3

Layer 6 immediately below it was comparatively less disturbed and yielded quite a large number of small antiquities. Amongst the important objects recovered, we had fragment of the spout of a large vessel shaped like the trunk of an elephant (No. 103), a terracotta ear-ring (No. 104), remnants of an agate stopper used as a lid for a container required for the heating of beads (No. 108), a copper ear-cleaner (No. 116), and besides a few fragmentary stone-mullers.

The pottery from layers 5 and 6 did not show much variation. It was dominated by types 10, 17, 18, 19, 20, 21, 28, 29, 29a, 30, 33, 35b, 37 and 45. Of these it was only type 29 which showed an earlier origin and a late survival also. In view of its intermediate position, this assemblage constituting layers 5, 6, and 7 were designated as belonging to Period V.

An exclusive ware of this layer was a painted pottery in which number of bands in black were painted on the necks of globular vessels. The paintings were executed in black on the red body of the sherd in concentric rings about 3 to 4 cms. in thickness executed while the pots were still on the potter's wheel. The sherds have a micaceous slip in the interior and a salmon-red surface on the exterior (*see* section on Painted Pottery below, p. 72 ; *see* Frontispiece). This pottery, sherds of which are encountered in large number in surface collections, was earlier considered to be and related to the characteristic 'black-on-red' painted ware found on many Chalcolithic sites in India. This feature, which prompted a thorough investigation of the site of Kaundinyapura, was now on stratigraphical grounds proved to be a very late arrival at the site probably after the Mauryan Period. The sherds earlier studied were extremely small to afford any real comparison but the occurrence of as many as 21 sherds confined exclusively to a late Post-Mauryan stratum (layer 6), shows that the early impressions regarding this ware were incorrect. This is again confirmed by the fact that the paintings occur in the interior of the ledge in the neck of several vessels, a feature nowhere noticed on painted black-on-red pottery of the Chalcolithic period.

Layer 7 was encountered in a very small patch towards the north-west of B3 and comprised of a very hard brown compact clay. The cultural deposit of the Period V comprised of about 5 ft. in thickness. It is distinguished by the finding of a large number of carnelian and agate beads mostly short cylinders with a circular cross section. This also included a copper coin on which the words 'SATISA' could be read very clearly. Palaeographical and stratigraphical considerations relate this layer to the Satavahana Period, a feature which is consistent with the occurrence of a fragmentary legged-quern (No. 147) found in its association.

Layer 8 is comprised of a loose brownish clay about 2 ft. in thickness (8-9 ft. below surface) and constitute an important landmark in the cultural history of the site, for it was in this layer that we found three fragmentary sherds of the well-known NBP Ware. The fragments were too small to give an idea of the exact shape of the vessels comprised by them, but the ware showed its characteristic gloss over a reddish slip. One of the fragments represents a small bowl with an obliquely cut rim probably forming part of a dish. The outstanding antiquities recovered from this layer were a square barrel bead of crystal (No. 153) and a few coins after the punch-marked variety. This also included one ear-lobe extender of polished red jasper (No. 97), and one antimony rod of bone.

On the grounds of stratigraphy and the association of NBP and punch-marked coins this stratum is assigned to Period III and is generally co-eval with the Mauryan Period.

Layers 9, 10 and 11 constituting Period II at the site are comprised of uniformly laid layers of about $1\frac{1}{2}$ ft. in thickness and consist of red-brownish clay with a large number of pot-sherds and brickbats with ashy patches in between them. The soil layers show more humidity and the pottery is dominated by a large number of vessels treated with the inverted firing technique. The forms again show a wide departure from the layers studied up to now. There is a great preponderance for dishes of various types with everted rims and bowls of the familiar type. A chocolate coating is resorted to on certain pots. They also contain a typical yellow slipped Pottery which is confined to this stratum. Only large basins and an exclusive China-hat or tulip-shaped jar cover emanated this stratum. A large number of beads from this stratum are distinguished by their sharp disc shape which has many parallels with similar beads of the Chalcolithic period in India. The quantum for small objects goes on diminishing and besides the occurrence of a few cattle bones (*Bos Indicus*) there is hardly anything important in this stratum which needs special attention. It is worthy of note, however, that the sequence of layers noticed in layers 9, 10, 11 is interrupted abruptly by a sterile layer No. 12 which comprises of a very hard dark compact layer of regur which is encountered here for the first time in the cultural deposits. There is reason to believe that this sterile layer was caused by a flood in the adjoining Wardha river, as the amount of small pebbles and gravel patches in this layer would show. This hiatus in the history of the site would well have been regarded as a definite break in the sequence of cultures but the contents of layers 13 and 14 below it do not show that it was so. As a matter of fact the pottery and the small objects recovered in the 3 layers (layers 9-12) superimposing the sterile patch and the two below it (i.e. 13 and 12) show a total identity of equipment. The sterile patch therefore has to be interpreted not as a break in Period II but as a local feature of topographical significance. Cross check in D4 did not reveal any such sterile activity.

The last layers 14, 15 and 16 hardly deserve any special attention. These are comprised of darkish brown soil with number of pot-sherds and brick-bats interspersed by dark ashy bands. No. 15 is the thickest deposit of such ashy layers. The principal antiquities in this layer were a number of crucibles employed by a smith in melting silver. As many as 18 fragments of walls and bases were found. Another noteworthy feature was a bead-necklace of twenty-two etched beads. Patterns on these are characteristically South Indian in origin and confined to the megalithic complexes.

The penultimate layer (No. 16) consisted of a very thick band of dark compact black clay or regur generally associated geologically with forested tracts containing lot of vegetable matter. The layer showed that it was deposited over the apex of a high pinnacled conical hill which comprised of the natural soil. The regur was very hard and did not allow the picks to penetrate easily.

The cultural sequence therefore resultant through the layers shows that there have been at least six principal periods in the history of the mound.

Site Kdn-2.—The site, hereafter designated as Kdn-2 represents the southernmost limit of Kaundinyapura. This mound (Fig. 4) is roughly oval in shape, with a sharp ridge along its E-W axis and rises to a height of nearly 32 ft. from the surrounding plains. It was

EXCAVATIONS AT KAUNDINYAPURA

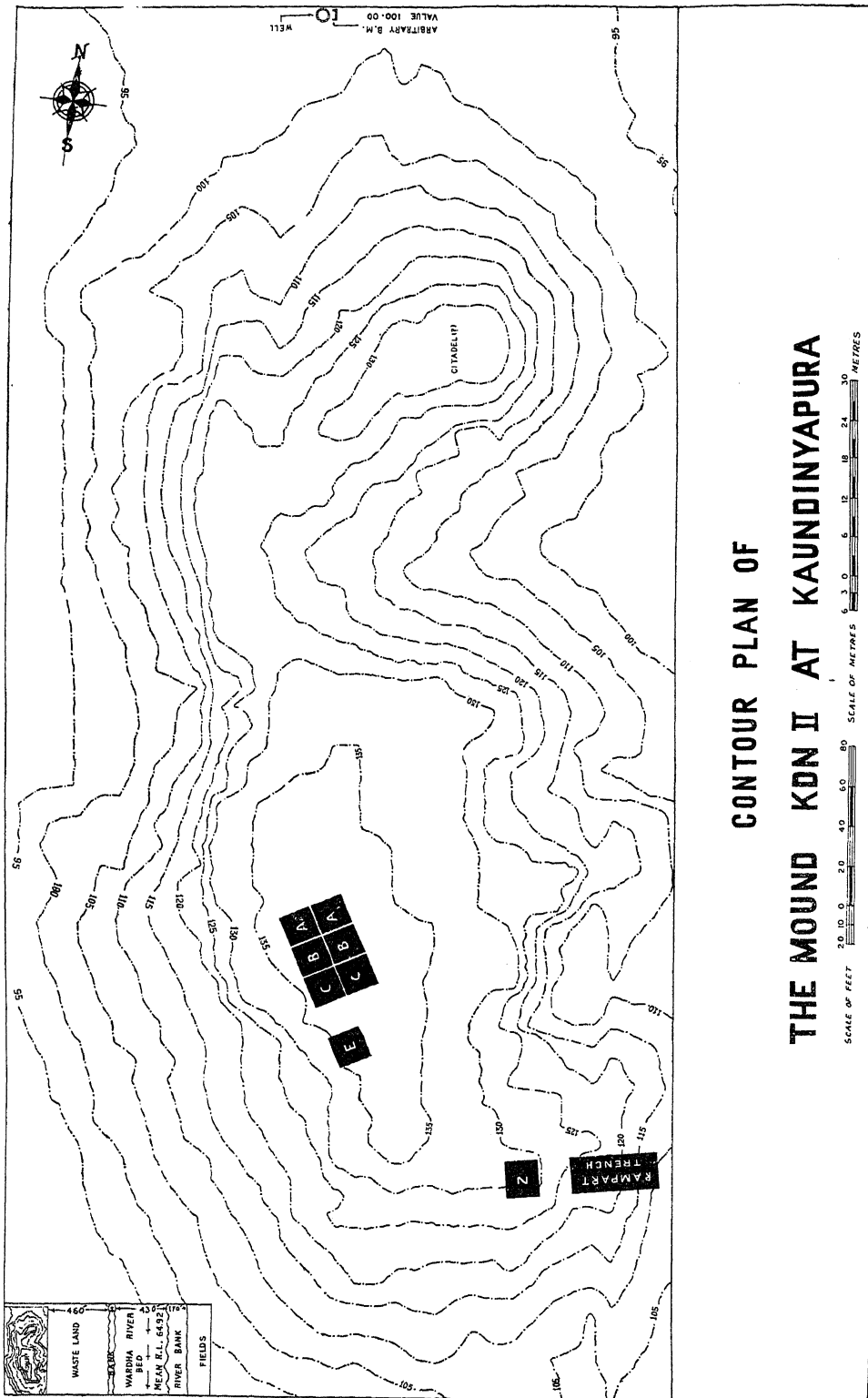


Fig. 4
Contour map of site Kdn-2

formerly contiguous with the Bhim Tekdi but is now cut away from it by a narrow gully made for a modern roadway leading to Kurha. Its northern end is much disfigured by earth-grabbers and by temporary hutments erected during the annual mela or fair in September. The ditches made by these local inhabitants have exposed in places a fairly complete cross-section of the mound and it was from one such gullies that much black-and-red ware and a fragmentary legged quern was collected during a preliminary visit to the Kaundinyapura early in February 1961.

The mound slopes gently and almost uniformly towards the east till it joins the terraces of the adjoining Wardha river, which flows close by, the present river bed being about 300 yards from the base of the mound. On the other three sides of the mound a vast alluvial plain of black cotton soil stretches for over six miles, the western end having a delightful grove of mango trees near its base. Beads, coins and minor antiquities can be collected in a large number from the western slope of the mound.

Knowing that the mound lay on the peripheral region of ancient Kaundinyapura, a long trench designated as Rampart Trench on the contour plan (Fig. 4), running N-S, 5 metres wide and exposing the entire strata on the eastern slope, approximating to a vertical height of 25 metres was lain at a suitable point. The primary object of this excavation was to obtain, within the limited time available for work, a complete cross-section of the Eastern slope. This trench was pegged at every 5 metre interval and the sectors formed thereby were designated serially as A, B, C, etc., starting from the top and continuing till it reached the terraces and the alluvial plain below and then the area was step-trenched. The digging started from the lowest sector E and the layers encountered in it were numbered as E₁, E₂, etc., from the surface till the natural soil was reached. After completing the work in sector E, the subsequent sector on the higher altitude was taken up for excavation, again designating the layers there as D₁, D₂, etc. These were lowered down till the penultimate layer met a corresponding one in E.

After establishing the co-relation of layers between D and E the excavation in D was stopped by leaving a bench in the trench (Plates XII-XIII). The continuation of the layers below the bench were to be studied from the adjoining next trench. This became necessary in view of the alluvial soil which yielded no antiquities except surface collection of pottery which had rolled on the slope and which therefore had no stratigraphic value.

After completing the work in D, sector C was started and lowered down till it met the settled layers in D. In this order the work proceeded upwards in A. In each case it was assured that the lowermost layer in each sector joined the first one or two layers in the subsequent lower pit and in this way a complete contiguous section of the entire slope of the mound was obtained. It was only in sectors A, B and C that occupational layers were met with, while those in D and E were natural soil layers. This indicated that only 15-17 metres of the vertical height represented the cultural debris, the rest being a natural mound.

The stratigraphy thus established on the slopes was counter-checked by sinking a large pit, designated hereafter as Trench Z, measuring about 6-15 metres square, at the highest point of the mound with a baulk of about $\frac{1}{2}$ metre in between A and Z. At the close of the season a depth of 3 metres was reached in Trench Z, the settled layers 7-8 from Z corresponding to A₁, and A₂ in the adjoining lower sector A. The stratigraphical inquiry in the main pit Z remained incomplete as the natural soil was not reached there.

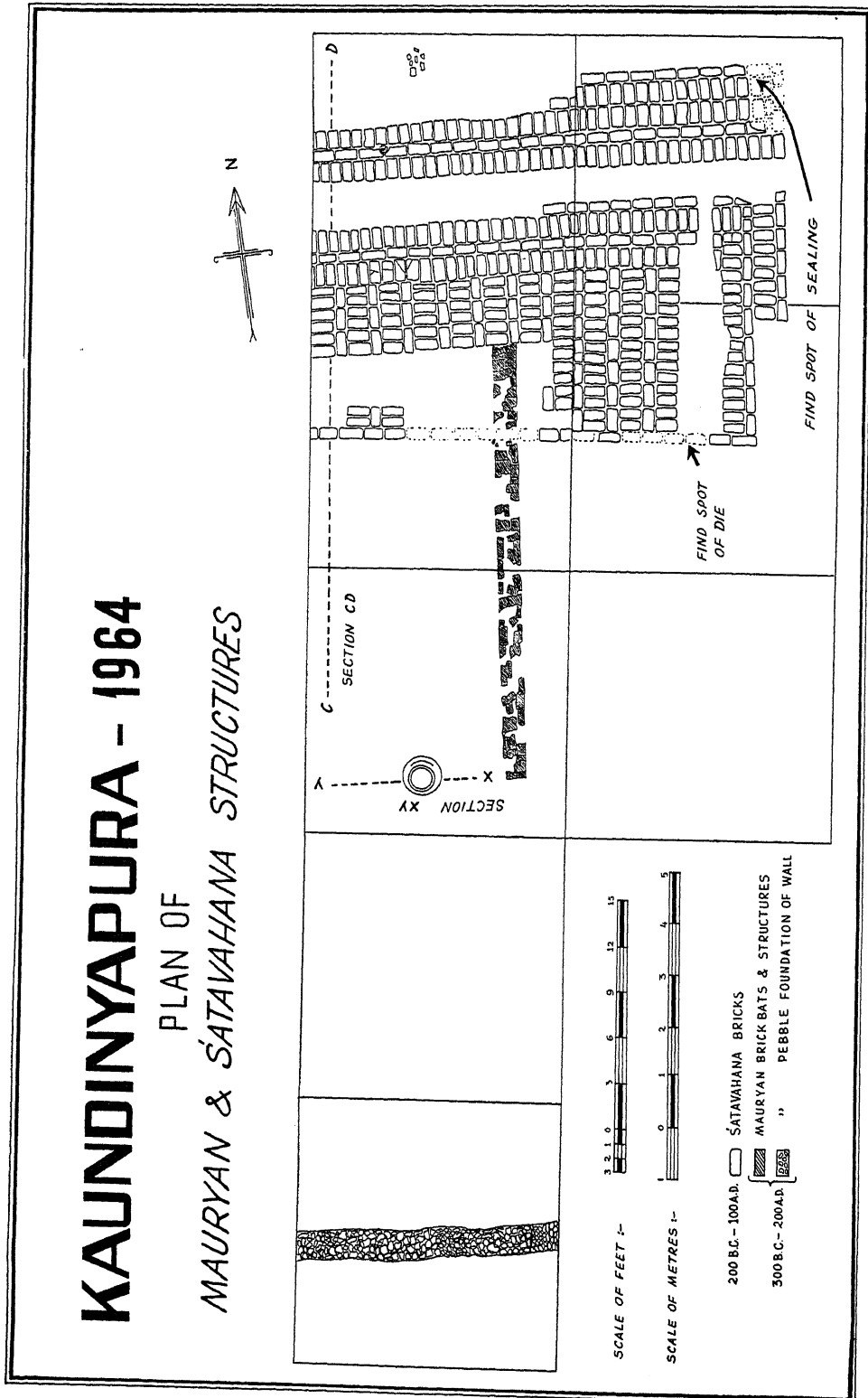


Fig. 5
Kdn-2 : Plan of Mauryan and Satavahana structures

The most important and significant objects are a few beads and bangles, a terracotta seal (No. 2-31) a Jasper ear-plug (No. 2-103), a bone antimony rod (No. 2-97) all from Trench Z; two bone combs (Nos. 2-35, 36), a toy wheel (No. 2-47) and a crystal pendant (No. 2-89) from sector A, besides a few others from the Trench C.

While no structural remains were met with in pit Z, Sector A Layer 4 revealed two fragmentarily preserved unconnected walls, separated from each other by about 3 metres. These ran parallel to each other and may reasonably be surmised to be the parts of a building, the exact nature of which could not be ascertained (Plate XI. A). Only four courses of brick-work had remained. The bricks, measuring $15'' \times 7\frac{1}{2}'' \times 3\frac{1}{2}''$, laid as headers and stretchers, formed a substantial wall 1'-9" broad and 2'-4" high, and measured about 7'-4" respectively. These had no foundation trenches and the temporary character of these was apparent. A large number of collapsed bricks encountered in the strata showed that considerable portion of the structure had vanished in the slope of the mound. From the associated objects like the terracotta seal (Plate XXXIX, 1) and a sherd of russet-coated Andhra ware (Plate XXVIII. B), these walls were assignable to the Satavahana Period.

Excavation of the sector C and D revealed some important features. The top layers of C showed the existence of decayed mud whitish in appearance and ran in closely paralleled bands alternating with ash and charcoal pieces (Plate XI B). The bands showed that they were the resultant debris of a slowly crumbling wall washed annually by rain-water. The wall in its original state was built of *pise* work and must have been a tall structure as it was built directly over thickly rammed black mud. So far as could be ascertained the thickness of the rammed portion was about 1 metre and must have been laid over the natural soil for over 2 metres at the base. The existence of the rammed mud foundations were noted at the base of sector C and continued to be encountered in sector D. In short here we had the foundations of a large mud wall which was intended for the fortification of the mound. Over the natural soil, a thick layer of Black regur was uniformly laid and this served as the foundation for the *pise*-work which was raised over it. It has not been possible to ascertain the exact date when the site was thus fortified but from the general nature of the layers it seemed evident that the wall was erected first to prevent the water of the adjoining river from damaging the habitation which lay behind the wall and secondly to protect the site, from a possible danger from an enemy. In order to verify the deterioration of a wall with *pise*-work, the extant fortification walls of a small Gadhi at Khubgaon, about 8 miles from Arvi were inspected. From this inspection it was apparent that the fortification of Kaundinya-pura could not have been very ancient and perhaps was contemporary with the Muslim Period.

Whether it was actually so, could only be determined by having a complete cross-section in the cuttings B and C and by co-relating the layers with the main trench Z. But the work remained incomplete in this respect, and had to be left for future exploration of the site. The make-up of the wall did not yield any antiquities and such of the pottery fragments included in its composition did not show any significant features. It may be mentioned that the fortification of the Gadhi at Khubgaon was also accomplished in this way, by mixing the white clay with bits of charcoal, small potsherds and had the same crackled appearance when exposed to weather. *Pise*-work is composed of sun dried blocks of clay of very large dimensions and is known in Maharashtra by the name Dhepa or Pendha. It is seen on the walls of many Gadhies or fortresses of the Maratha Period in Khandesh.

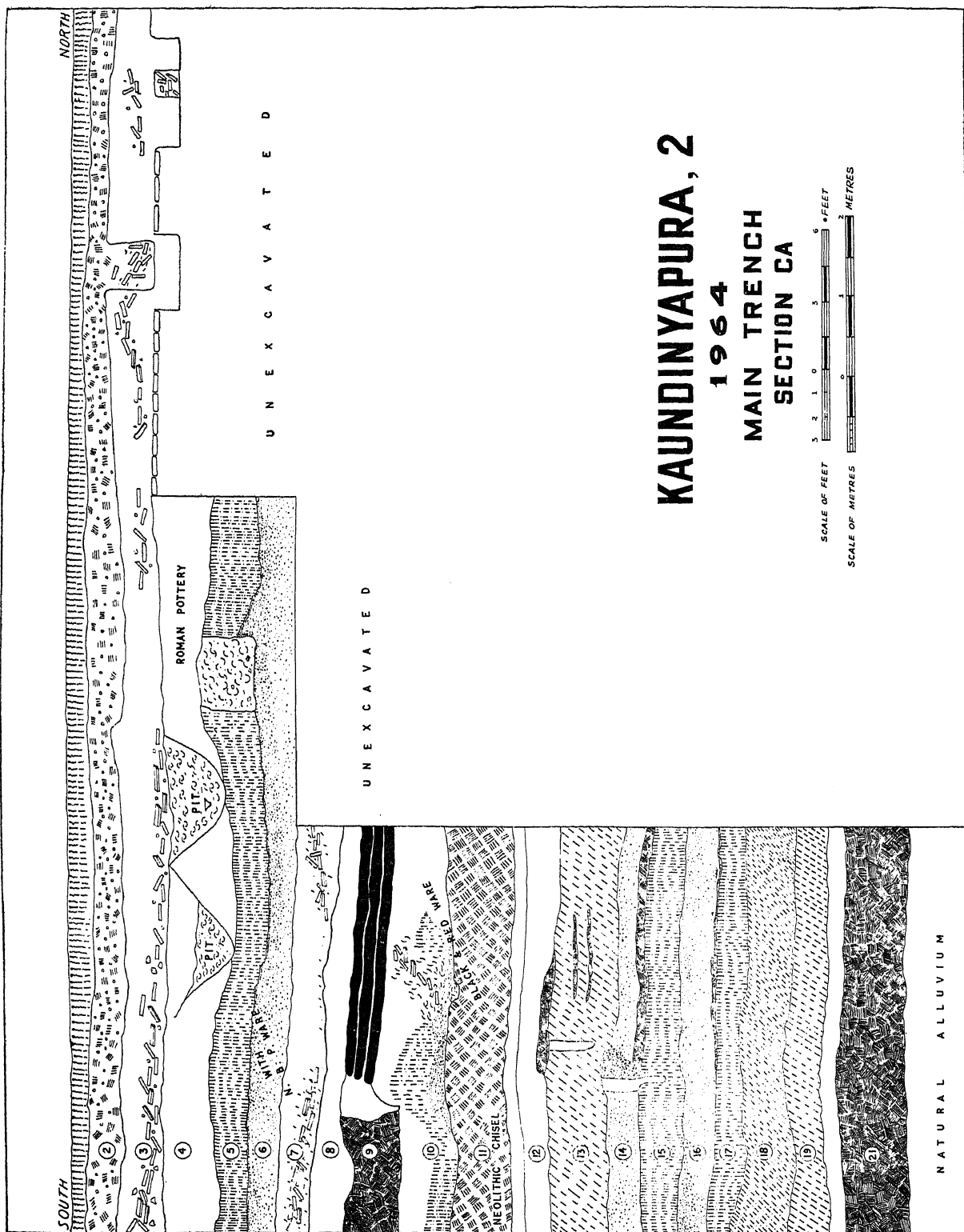


Fig. 6

Kdn-2 : Section of the main trench

EXCAVATION OF THE MAIN TRENCH AT KDN-2

In April-June 1964, further excavations were undertaken at the site Kdn-2 with a view to ascertain and confirm the findings of the previous season's work at the same mound. In order that full sequence of the cultures should be obtained in the same trench, it was decided to start from the highest point of the mound (35 feet from ground level). A long trench 20 metres wide and 60 metres in length designated as AA', BB' and CC' (each measuring 5 m. \times 5 m.) was laid out. Leaving a gap of another 5 metres, a small trench E (5 m. \times 5 m.) was laid in the North-South direction on the horizontal ridge of that mound (Fig. 4).

Similarly trench Z of the previous season was also lowered down to a maximum depth of 28 feet in order to co-relate the data of the previous season's excavation (Fig. 8).

The following are the details regarding the excavations. In trenches AA', BB' and CC' the excavation was confined to a uniform depth of 8 ft. 3 inches all over. In C the trench was excavated up to the natural soil which was reached at the depth of 33 ft.

After the removal of the top soil it was noticed that the entire surface of the mound was covered with Chunam and brick-bats which corresponded with the late Muslim layers in the adjacent Bhim Tekdi (Kdn-1). From the finding of several objects of a mediaeval date and the red coloured Chunam surfaces there is hardly any doubt that these layers corresponded with the large Muslim building of Kdn-1. Happily a layered glass bangle and other Muslim objects established the date beyond doubt. After removing the second and the third layers which comprised of black-brown earth and much pottery (Layers 2 and 3), A and A' yielded a large pavement of bricks which appeared to be forming part of two distinctive adjacent but narrowly separated brick buildings. (Fig. 5) The bricks towards the ends were laid uniformly as headers with a course of stretchers in between. Occasionally these were supported by a small ledge of one course of bricks noticed in the western sector. Between the foundation walls the bricks were laid with a pattern resembling the ladders i.e. one course of headers alternated by another one of stretchers running throughout the area so far as could be excavated. This probably formed the 'inner' portion of the house.

Leaving a narrow ledge of (3'-0") another wall ran parallel to the former house with the ends running into headers with a line of stretcher in between. It ran parallel to the previous wall of the adjacent house in the east-west direction. The 'inner' portion of the house was not excavated. Happily, in the foundations of this wall, a small terracotta triangular seal (Plate IXL 2, 2a) reading 'Savitasa' in characters of about first-second century A.D. was found in the basement, on the strength of which the date of the buildings could be settled. The dimensions of the bricks are the same as located in the previous year i.e. about 15" \times 7½" \times 3½". The entire area of A and A' and half the portion of B and B' was occupied by this pavement of the inner part and the walls of the two buildings of the Satavahana Period. (Plate XVA) in the centre of B' a little below the pavement layer was noticed a small hard burnt terracotta die of a coin (probably Kshatrapa) and is another (Plate XXXIX, 4) indicator towards the date for this building complex.

As the area was occupied by the pavements no further digging was attempted in square A and A' and B and B', it was easier to co-relate the sealing layers on the strength

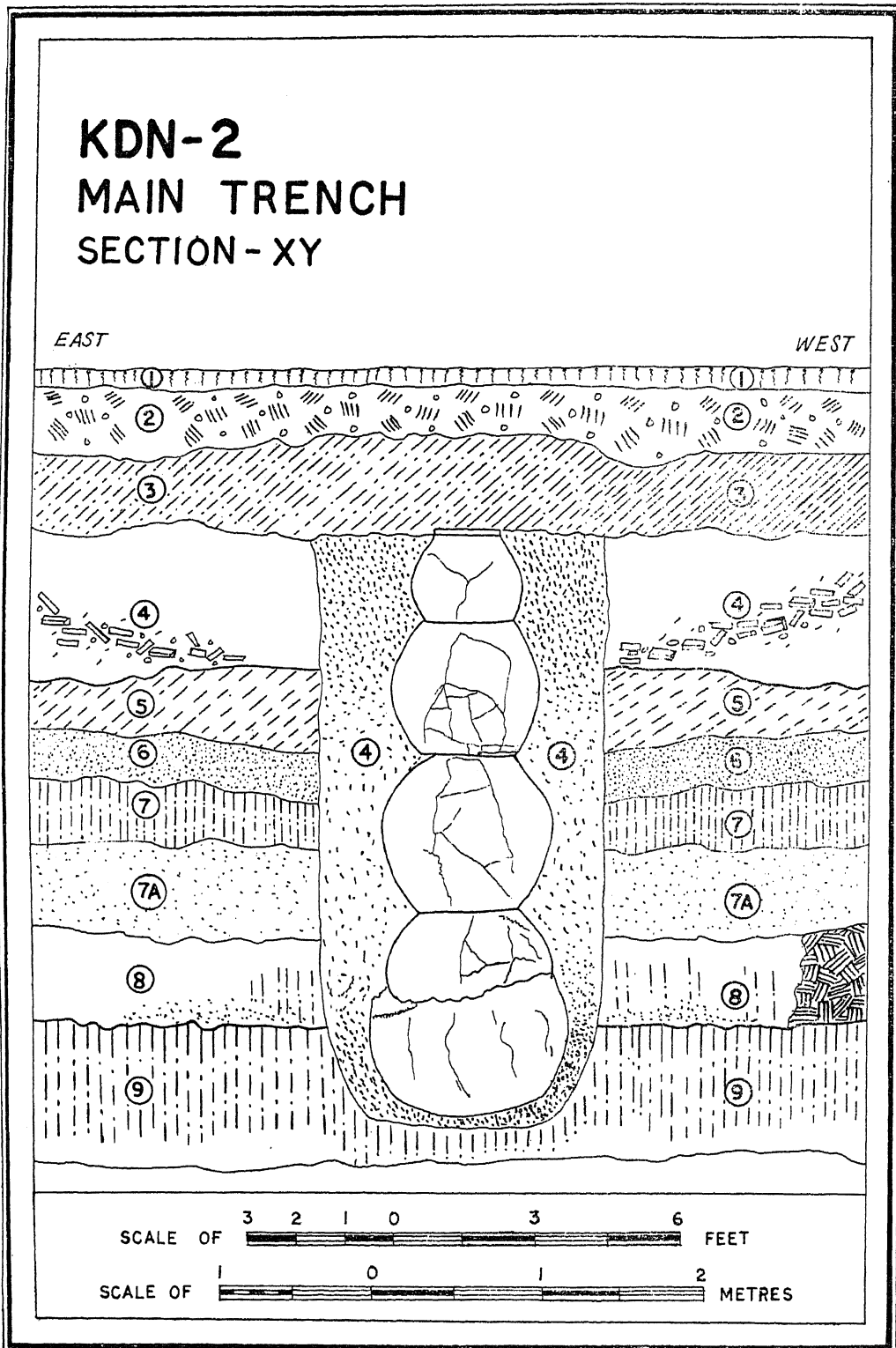


Fig. 7

Kdn-2 : Main Trench section XY showing soak-pit

THE EXCAVATIONS, STRATIGRAPHY AND CHRONOLOGY

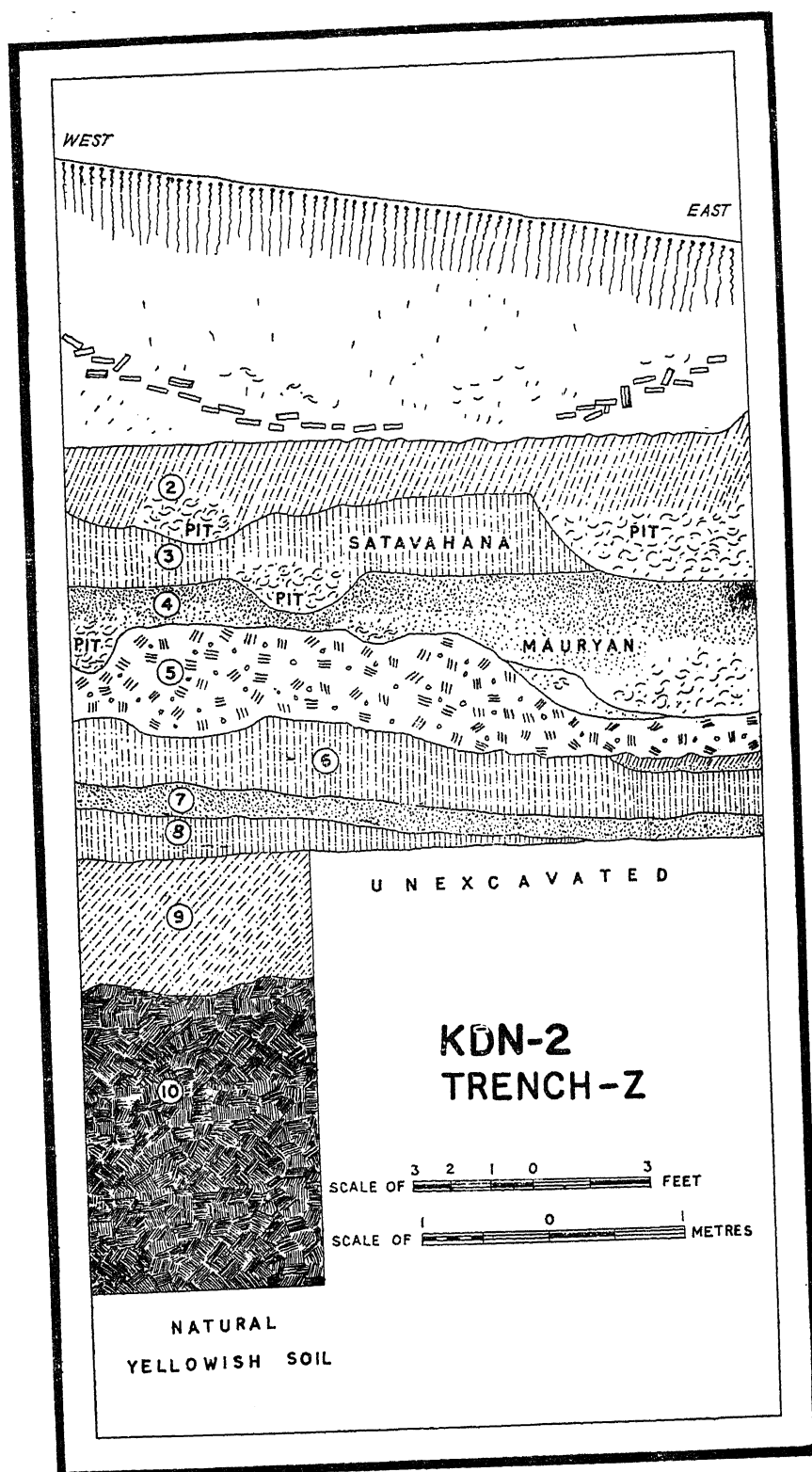


Fig. 8
Kdn-2 : Trench Z Section

of the datable evidence of the seal. About a foot below the Satavahana pavement was noticed in Layer (4) a narrow wall running roughly north-south to a distance of nearly 7 metres. This comprised of brick-bats lined with small blocks of trap-stone. Only a course or two of this had survived but the indications were that not much time had elapsed between the dilapidation of the lower structure and Satavahana pavements on top. Many distinctive objects and features were noticed by which the date of this wall could be fixed as belonging to the Mauryan Period. In the north-east corner of Trench B, quite a large number of iron weapons were found together with a lump of iron billets (probably the stock-in-trade of a iron merchant). Associated with this layer were also two transparent glass discs or ornaments meant for the ear (ear reels) which were current in the Mauryan Period. The layer also yielded a disintegrated and river-worn piece of the NBP Ware which was current in the Mauryan Period. In Trench C the same layers yielded the remains of a sokage-well constructed out of five extraordinarily large bottomless earthen jars placed one above the another (Plate XV). Layer (3) showed that this sokage-well was sealed by it (Fig. 7).

The sokage-well was laid into the natural soil by taking a vertical deep trench $7\frac{1}{2}$ feet in depth laid into the virgin soil. The jars are about 2 metres in width and about $2\frac{1}{2}$ metres in height. The lowermost jar was somewhat larger than the rest of the three and had collapsed considerably in ancient times and was encased in another Ranjan of wider dimensions. The bottoms of each of the jars were chopped off and they were placed one above another. After placing the jars the pit was packed with material comprising of rammed potsherds and lime, with a sprinkling of brick-bats. The upper portion of the pit was lined with a pavement of large brick-bats surrounding the whole area and the mouth of the uppermost jar. In the western portion, the floor was paved with a mixture of lime and concrete. This trench (Trench C) was lowered up to a depth of 10 metres till the virgin soil was reached. The most noteworthy amongst the objects was the finding of a Neolithic chisel (Plate L,1) obtained from Layer (11) at a depth of 18 ft. below surface. The stratification indicates that quite a long period must have elapsed between the layers associated with the chisel and the Mauryan which were encountered in Layer (5).

The layers below the Mauryan strata were generally of a maximum character and comprised of ashy-bands of clay intercepted with large material containing charcoal dust. The general alignment of these layers indicated that they sloped towards the river and it has to be assumed that the adjoining river had played considerable part in shaping them. A flood immediately after the Neolithic age at Kaundinyapura may not be unwarranted. Excavation in sector E measuring 5 metres \times 5 metres confirmed the stratification obtained in the adjoining large trench. Layers (1) to (4) were devoid of any interest except a mud brick wall with a pebbled foundation layer. A number of bones (human ?) were associated with this foundation. Lot of ash and some stones covering a fragmentary burial (?) were noticed. The mud brick wall was disintegrated, but the pebbled foundation clearly indicated that it was resting on solid material for which the pebbles from the adjoining river were used. Immediately below this wall running east-west was noticed a small jar almost globular in shape with a stone stopper as its covering. The pot was found to be empty and probably contained some liquid at the time of its burial. In the same layer was encountered the jaw of an elephant (Pl. LIV. A) which is one of the noteworthy objects of this period. This indicates that the climate of Kaundinyapura was not so arid in the Mauryan and the Post-Mauryan Period. Immediately below this and corresponding to the stone walls of the Mauryan Period

THE EXCAVATIONS, STRATIGRAPHY AND CHRONOLOGY

in the adjoining trench was noticed the fragment of glass eye-bead (Pl. XLVIII. D). This comprises of two saucered inlays of dark blue glass of a pale-blue colour in a pale-bluish metrix. This specimen has a dating value since similar beads were reaching India in the Mauryan Period as is known from other examples elsewhere. (See below pp. 98-102). The excavation of this trench was continued to a depth of 10 feet but nothing noteworthy was encountered. The trench therefore was not further worked up.

On the basis of the layers and the objects uncovered in the following workable chronology could be invested:

Period I	Megalithic	Layers 12-21
Period II	Pre-Mauryan	Layers 8-11
Period III	Mauryan (300-100 B.C.)	Layers 6-7
Period IV	Satavahana (150 B.C.-200 A.D.)	Layer 5
Period V	Late Satavahana (200-250 A.D.)	Layer 4
Period VI	Muslim	Layers 2-3

Period I.—The earliest inhabitants at the site were a people who used a black-and-red pottery of the inverted firing technique generally associated with the megalithic folk in South India. These people used metals like silver and copper as seen from the crucibles left by them. Their ornaments consisted of etched carnelian beads of the South Indian type. Since no burials are associated with this stratum, this appears to be a habitation site of the megalithic folk.

Period II.—This phase marks an important stage in the life history of the site. The pottery of this period shows a wide-spread use and in some respects continuity of the black-and-red ware technique of the preceding period. The cultural equipment does not show any high attainments, nor any tendencies for sophistication. There is an apparent break in the continuity of the period by an intrusive sterile layer but as observed above, it has to be attributed to the proximity of the river.

Period III.—This phase marks the first emergence of coins and sophisticated jewellery in the form of elaborate beads and ear-plugs. Association of punch-marked coins and the well-known NBP Ware marks this period as belonging to the Mauryan stratum.

Period IV.—This is capped on the remains of the preceding phase and shows a continuity of the preceding phases in respect of specialised pottery and beads. The occurrence of Satavahana coins relegates it to the Satavahana Period.

Period V.—This phase marks a deterioration in the earlier phase (Period IV) and does not seem to have had a long life in the history of Kaundinyapura. The layers of a subsequent period would naturally be devoted to the important ruling dynasties like the Vakatakas, Rashtrakutas etc., who are known to us through other sources of our history, but unfortunately all these layers have been levelled when the site was occupied by the subsequent Muslim rulers at Kaundinyapura.

Period VI.—This phase is represented by the Muslim occupation of the mound characterised by the use of large boulders, chunam-paved floors and gigantic structures. These people used a type of pottery of the preceding phases. The cultural data for this period was comparatively meagre as very few vestiges of this period could be known through the excavations.

CHRONOLOGY

Period I.—The chronology of the site can be estimated in a broad outline only. It is not possible to date the megalithic occupation of the site in Period I. It is still a moot problem in Indian Archaeology, whether the megalithic folk should be brought down to a late period as first-fourth century A.D. as has been done by Dr. R. E. M. Wheeler. It will depend on independent evidence obtained from a series of sites in India. In a general discussion on South Indian megaliths, Indian scholars like N. R. Banerji and Saundararajan seem to favour an early date prior to the 'black-and-red ware' using people. The dating of our Period I will depend on the firm date for the black-and-red ware. Their interrelationship in so far as the sequence of cultures at Kaundinyapura is concerned, we are now in a definite position to antedate the megalithic to the black-and-red ware people but how much anterior we cannot say. They in a way corroborate the sequence of cultures obtained elsewhere as at Gilund, Ahar and the South Indian megaliths.

Period II.—It is not possible to date this precisely but the chronology is dependent on the occurrence of NBP Ware and punch-marked coins in the subsequent phase, i.e., Period III.

This is therefore calculated as belonging to pre-Mauryan phase. It is characterised by the continuance of the red-and-black wares. Presumably, it belongs roughly to 800–600 B.C.

Period III.—The occurrence of punch-marked coins and NBP Ware present no serious difficulty in dating this stratum to about 200 B.C. with margin of nearly 100 years on either side. This precaution is necessary in view of the fact that our punch-marked coins which constitute one important factor in fixing the chronology have not been dated within precise chronological limits. While they show a continued use till second and fourth century A.D., the precise date of their origin cannot be determined with certainty. Though 400 B.C. is taken to be the earlier limit of their fabrication much depends on their typology, their use of symbols and the correct interpretation of them. We are not in a position to relate the punch-marked coins of the Kaundinyapura to the standard type of classification or its alleged grouping under the heads like Nanda, Mauryan, Late Mauryan etc. The symbols obtained on them are current over a very wide area and we are not able even to locate the geographical region in which they were first issued. One is not certain again in respect of a coin No. 139 which marks an intermediary between the punch-marked Karshapanas and the later die-struck coins. This coin forms a intermediary link between early punch-marked coins and a series of die-struck coins which were current in India at a later period.

While that is the case with the coins, we are also in an indeterminate position regarding the few sherds of the NBP Ware. This is particularly because it occurs in a peripheral region like Vidarbha and must have taken a long time to travel from its original home of fabrication viz. the Kausambi region in the Panchala country. We have no clear date for this *de luxe* pottery in India, which ranges from 600 B.C. to *circa* 2nd B.C. the date given to it by the finds at Nasik, or Bahal on the Girna in Khandesh.

Taking the mean of the two it may generally be held that the date of Period III can be fixed within reasonable limits from the other associated finds and guide fossils like the square barrel crystal beads, the disc-shaped short cylinders and above all by the ear-rings of polished jasper from this stratum. I have no hesitation, therefore, in assigning Period III as belonging to about 300-100 B.C.

Period IV is characterised by the occurrence of Satavahana coins and by a pottery which is usually encountered on many a Satavahana sites in the Deccan. In particular we must mention the incidence of a russet-coated Andhra Ware sherd in association with this period as an instance of how cultural migrations were a regular feature in Ancient India. This ware has its origin in North Mysore and the Madura region in the South. Sherds of this ware are known from around Coimbatore, Amaraoti (Krishna), Chandravalli (North Mysore), at Nasik in Satavahana levels; Kaundinyapura in the present state of our knowledge appears to be the northernmost limit, where the Andhra painted ware has reached. The general evidence of brick buildings, terracotta figurines, objects like combs, glass ear-reels and coins etc., show that we may not be far wrong in assigning B.C. 150-200 A.D. as the date for Period IV. Incidence of the clay seals is another pointer in this direction.

Period V is of very short duration and on stratigraphical grounds it is assigned to *circa* 200-250 A.D.

Period VI.—Though no coins have been encountered in this stratum, the use of layered glass, pottery of a crude fabric, chunam-floors, etc., probably indicate 1300-1600 A.D. as the probable date for Period VI. Special attention may be drawn to the presence of maize decoration found on the potsherds of this period.

In general it may be stated that we thus have at Kaundinyapura through the present report, a complete cross-section of the history of the site from 2000 B.C. onwards to about 1600 A.D. The history is not continuous in the strict sense of the term because we have these periods intervened by large gaps both stratigraphical and cultural. One particularly misses the period in the later history of Vidarbha such as the Vakataka and the Rashtrakuta regimes.

The overall picture of this stratigraphy is quite consistent with what we get in other parts of the Deccan particularly at Nasik, Nevasa, Bahal, Prakashe, etc.

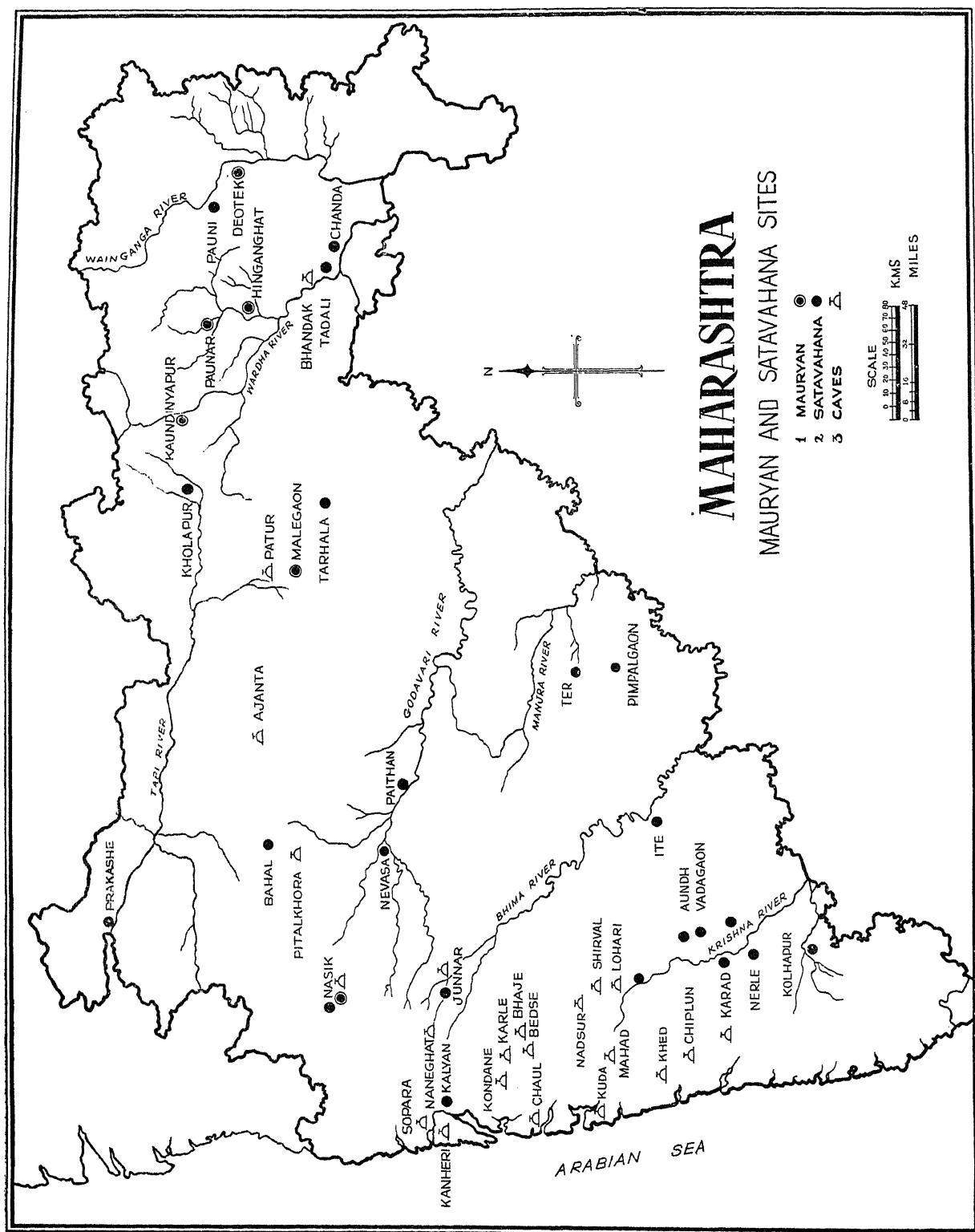


Fig. 9
Map of Maharashtra showing Mauryan and Satavahana sites

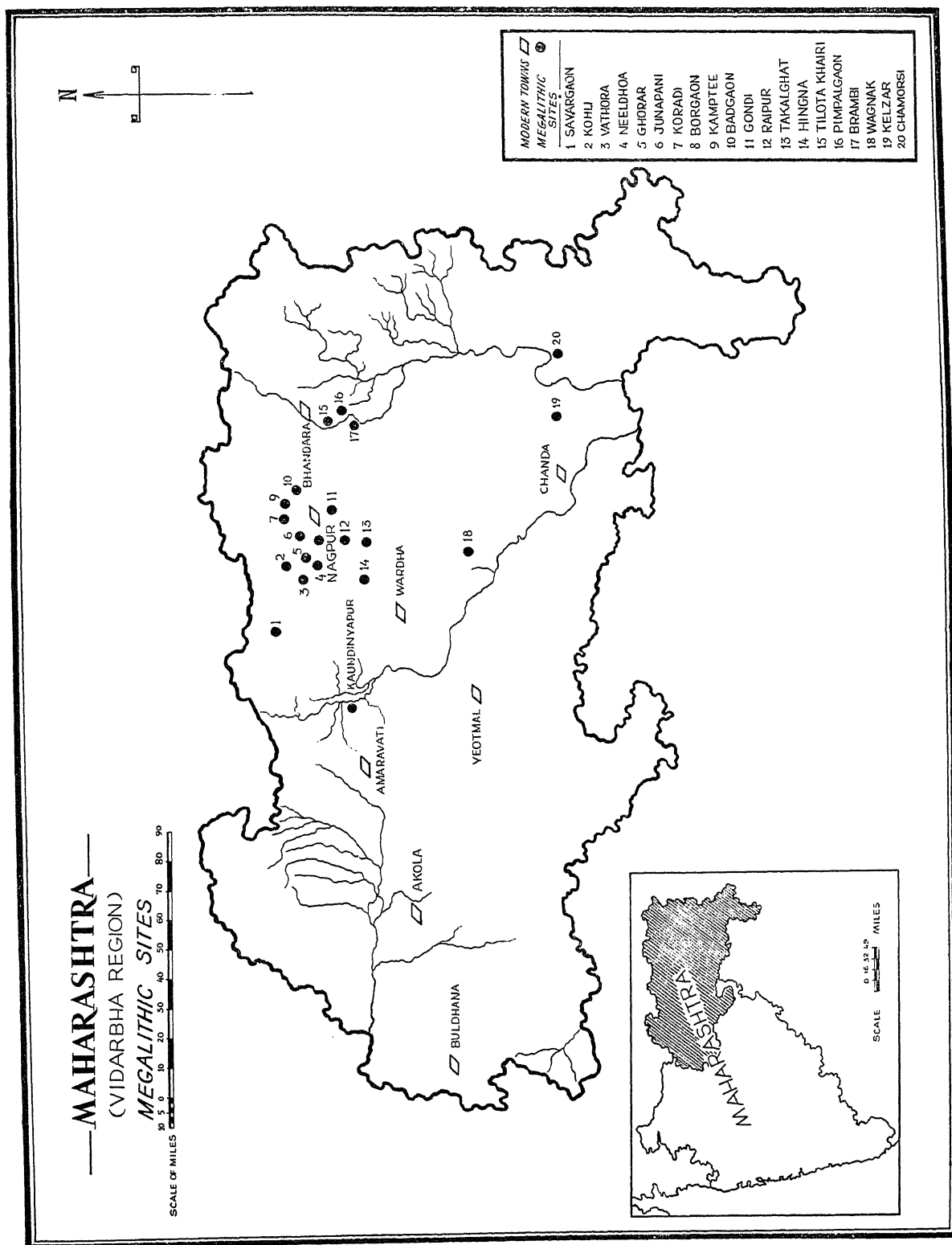


Fig. 10
Map of Vidarbha showing Megalithic sites

THE POTTERY

GENERAL CHARACTERISTICS

SINCE Kaundinyapura is as yet the only site in Vidarbha region which has been subjected to systematic archaeological excavation, it is natural to assume that the stratigraphy and the pottery sequence from Kaundinyapura should serve as a useful guide to future work in this region. The results detailed here however, pertain to the individual cuttings and can in no case be said to represent a complete picture of the site. Surface exploration on the mounds have yielded several interesting types of pottery and tools which have a known chronology and dating value, but these had to be left out of consideration here because they were stripped off their archaeological context. Their occurrence however indicated that the site was of great promise and many potentialities. Among the tools, mention may be made of small pebble tool belonging to Series II found in the river bed and a large number of microlithic implements represented by lunates, crescents, parallel-sided flakes and long blades. In the pottery forms we had a few sherds of a black-on-red ware which had geometric designs in jet-black paint over a bright red surface which are known to have Chalcolithic associations on many a site in India. Besides numerous sherds of the Red Polished Ware, resembling the Samian, were found and which elsewhere in the Deccan and Saurashtra are known to form part of the Kshatrapa-Satavahana assemblage. Imported Magaron ware was represented by a single sherd. These if encountered in the cuttings would have greatly strengthened the stratigraphical position of the site and its chronology. The occurrence of these however, deem it necessary that for the full understanding of the cultural sequence a large scale horizontal excavation would be justified.

Provisionally the excavated pottery from Kaundinyapura can be studied in the following groups:

- Group A .. Black and Red Pottery including Megalithic Black-and-Red or all-black wares.
- Group B .. Pottery associated with NBP wares.
- Group C .. Pottery associated with Satavahana and Late Satavahana layers, including a black-on-red painted ware.
- Group D .. Red wares associated with the Muslim buildings.

The pottery from Kaundinyapura, with the exception of a few sherds is mainly wheel-turned, generally on a fast wheel, well-baked and is very sturdy. The wares are mainly utilitarian in character, denoted by simple forms like dishes, bowls, water-jars, jar-covers, etc. Devices like spouts, handles and loops for pans and *applique* decorations, are very sparingly employed. Incised and surface decoration by impressions by thumb, cloth (Pl. XXVI-XXVII) or by the maize corn (Pl. XXIII) is resorted to only in the Late Mediaeval or Muslim Period (Period VI); graffiti (Pls. XX-XXII, Figs. 27-30) occurs exclusively on wares of Period I (Megalithic) and only sporadically in the subsequent two periods (II and III) (*see below pp. 78-85*). Only in three instances large dishes are known to have been used as 'Strainers' form a single or a group of large holes at the bottom (Pl. XXV). In one, the hole appears near the edge of the rim probably intended for the hanging of the vessel by means of a string.

All the vessels generally bear a good slip. In mass-produced vessels like Types 1, 1a, 8, 9, 11, 31, etc., a clayee wash by dipping the vessel into water in which some clay

was dissolved was enough to close the pores of these rough and ready-to-use vessels before firing. In one instance a cooking Handi (Type 11) was found to have a *Geru* or Haematite coating at the base, probably for even distribution of heat.

Mica, lime and sand appear to be the main degreassants in the make up of the fabric. Mica is present either as a constituent of the local clay taken from the adjoining river alluvium but occasionally it is used as a purposeful additive in the slip and in the body fabric (see Types 56-67 below). Vessels with a very large proportion of mica came even from the Black-and-Red ware layers (Period I) (Types 66-67), only sporadically from the Mauryan levels (Period III) and were on the increase in the Late Satavahana Period (Types 60-62).

The clay is generally very well levigated especially in the pottery from the lowest levels (Period I) but in the upper strata, especially in the Muslim layers of Period VI (see Types 1, 3, 8, 9, 11, 33, etc.) it tends to be very coarse almost resembling brick.

Inverted firing.—The vessels in the lowest two Periods (I and II) (excluding the red wares) in a very large majority were fired by the 'inverted firing' technique. It was resorted to only occasionally in the Satavahana layers (Period IV) as in Type 7A but was mainly predominant in the earlier Periods (I and II). In this process the pots were stuffed with some combustible matter in the interior and were placed upside down in the kiln while firing. This results in the surface of the pottery getting a black-sooted slip inside and to a considerable extent on the exterior, nearer the rims and the globular body. The portion of the vessel which did not come into contact with the fire under reducing conditions was left having a very patchy appearance. The Black-and-Red Ware thus produced has an important bearing on the chronology of the site as wares with this technique are known from several chalcolithic sites in India, particularly at Ahar in Rajasthan, Rupar in Ambala district and Lothal in North Gujarat in an admittedly known chalcolithic assemblage. The ware is also noticed in some of the allied sites in Central India. The present excavations have shown that to a degree the technique was also prevalent in the Satavahana Period (IV) also. In view of this a very close study of the fabric of these wares occurring in a different strata at Kaundinyapura was made and it is found that the ware can conveniently be divided into two distinct classes in spite of the identical technique. These have been labelled as (a) Megalithic Black-and-Red Ware; and (b) Later Black-and-Red Ware according to the circumstances of their incidence in the present excavations. These two wares disclose the following characteristic differences:

(1) In the megalithic Black-and-Red Wares the black slip in most of the cases has a very bright shining appearance due to the burnishing, a feature which is not commonly noticed in the Later Black-and-Red Wares.

(2) The red surfaces (occasionally yellowish buff) in the megalithic wares have a very smooth texture which is not observed in the later wares. The slip in the latter tends to leave a crackling surface.

(3) The section of the pottery in the megalithic wares is generally very thin. Amongst the later wares it gradually tends to become thick. The earlier megalithic fabric shows that it received considerable heat and was very hard-baked. The later Black-and-Red Ware is indifferently fired and leaves a pitted surface.

(4) The wheel striations seen on the megalithic Black-and-Red Ware are distinctive by their appearance under the burnishing; but the later Black-and-Red Wares, probably produced under the slow wheel, lose their fineness.

A vital point which needs a careful study in the Black-and-Red Wares of both the megalithic and the later fabrics is the position of the individual pots in the kiln. The thinness of the megalithic pottery gives it an elegant appearance noticed both in the black-and-red and all-black sherds. The latter fabric is noticed at Maski, Sanur, Brahmagiri and many other known sites with megalithic associations. In these the rim portions are generally preserved intact, and from this incomplete shape it is difficult to surmise if any portion of the vessel turned red under oxidising conditions. In many of the specimens recovered from Kaundinyapura the red portion occupies so insignificant a portion at the base, that it is inevitable to conclude that at least some of the Black-and-Red Wares of the megalithic fabric were fired individually by placing them alongside in the kiln and without being capped by similar vessels as in a stack. No all-black vessels were noticed in Period II at the site and the later Black-and-Red Ware associated with this phase appeared to have been produced by stacking them in the kiln. This gains support from the fact that distinct patches in red have sharp outlines in black which get diffused only slightly at the edges. This may be the result of tight fitting vessels pressed hard into each other while stacking; but the question requires further investigation if the practice of individual burning of pots as seen in the megalithic fabrics was abandoned at a later stage. So far as the evidence from Kaundinyapura is concerned it is obvious that the later Black-and-Red Wares were made only by careful stacking in the kiln and not by placing these alongside and uncapped. This point is stressed by Shri B. K. Thapar in his report on the excavations of Maski¹ where it is indicated that while describing the Black-and-Red Wares, the general assemblage of other objects such as iron, has to be taken into consideration before terming them loosely as belonging to 'megalithic' cultures, particularly in a class of pottery unearthed from habitation sites, in addition to such other factors as shapes and forms of vessels.

In ascribing the Black-and-Red Wares and the all-black wares of Period I to the 'Megalithic' culture at Kaundinyapura the following factors have dominated. The forms of rims in dishes and bowls, being repeated in the later Black-and-Red Wares at the site, do not help us much in this respect. But such special wares as represented by Types 74, 74A and 74B which have parallels from other megalithic sites give the necessary clue. Type 74 represents the broken portion of a lid which is closely paralleled by Types 8 and 9 from the urn burial at Porkalam²; the conical lid-tops denoted by Types 74A and 74B have their proto-types at Brahmagiri³ without the ring-terminals. These are also known from Sanur.⁴ Unfortunately the portions recovered from Kaundinyapura are fragmentary as to lack conclusive evidence but the similarities of the fragments are striking to a great degree. Another parallel is provided by the tulip-shaped cover (Type 73) which closely resembles Type P 11 at Brahmagiri⁵ and the burial pottery from Maski.⁶ It must be said however that the parallels cited above are from the Black-and-Red Wares from the respective sites, whereas the Kaundinyapura example, though emanating from the layers of Period I, has a yellowish buff slip with marks of indifferent firing, and affords a good link in respect of the shape.

Yet another clue is provided by the graffiti occurring on the Black-and-Red ware of Period I which has been compared with its analogues from other megalithic sites in

¹ *Ancient India*, No. 13, pp. 63-64.

² *Ancient India*, No. 8, pp. 9-11.

³ *Ancient India*, No. 4, Fig. 13, Type P2.

⁴ *Ancient India*, No. 15, Fig. 6:74.

⁵ *Ancient India*, No. 4, Fig. 14, and page 215.

⁶ *Ancient India*, No. 13, p. 47, Type B (iii) 5.

THE POTTERY

India (see below pp. 77, 79, 81, 83). While the comparisons show many similarities, though not a total identity, it appears that these incised marks of an unknown purpose survive for a very long time at Kaundinyapura than any other site in India. The identity of the fabric in many cases is unmistakable. The possibility of these being strays Periods III-IV may not be precluded, as it happens on habitation sites explored to a limited extent.

The most conclusive evidence however is provided by the occurrence of Etched Beads in Period I. While the etched pattern¹ comprising of chevrons in between marginal bands has a long survival in India at least upto the Satavahana Period in the Deccan, it must be said that a tablet bead with radial strokes around the margin (or spots in certain cases) has definite megalithic associations in South India (see below p. 89 for detailed comparisons). Though the former pattern appears to be well distributed all over India, tablet bead with short strokes is almost exclusively a South Indian pattern mainly emanating from megalithic complexes; and the Kaundinyapura specimens may prove to be the northernmost limit as yet known. (I exclude here a specimen from Kosam in the Allahabad Museum which is without any archaeological context). The minute size of some of the etched beads is also a point in favour of the megalithic assemblage in Period I. Very minute etched beads have been recovered in the urn burials at Soutakkeny, and in the burials at Tekewada.²

The Black-and-Red Ware with inverted firing technique, which immediately follows Period I, and its differences with the megalithic Black-and-Red Wares have been adequately studied at other sites also, particularly at Maski, Sanur and Brahmagiri. But the former ware has, as has already been pointed out by Shri A. Ghosh,³ in *Indologen-Tagung*, 1959, has no independent dating value, as the technique remains unchanged through centuries and there is hardly any perceptible difference between the wares in different periods. Though the relative priority of the megalithic Red-and-Black Wares over the later wares has thus been established at Kaundinyapura, as on other sites in India both these wares in Periods I and II cannot be dated independently, and without taking into account the evidence from other sites as well.

The range of forms in the Black-and-Red Ware of Period II does not go beyond a few dishes and carinated bowls of a familiar type on other sites as well.

The pottery of Period III is characterised by the presence of the well-known NBP Ware, of which only three small sherds were found. These are rim fragments of carinated bowls which are now known to have a very wide diffusion over a considerable area from its main centres of fabrication like Kausambi, Ahichchhatra and Rajghat. The comparative scarcity of the ware, also noted from areas in the outlying regions, indicates that it actually travelled from any of the sites in Uttar Pradesh and must have been very much prized or valued both for the gloss and the excellent finish characteristic of the ware. Consequently it is also natural to suppose that it took some time to reach the outlying regions. The ware has been discussed on several occasions in archaeological publications and it is not considered necessary to cover the same ground again. The occurrence of this ware has given a firm dating to Period III.

¹ No. 24 in my study on *Etched Beads in India*, Poona, 1949.

² *Indian Archaeology—A Review*, 1956-57, Pl. XXI, and information from Shri M. N. Deshpande.

³ A. Ghosh, "A survey of the recent progress in Early Indian Archaeology" *Indologen-Tagung* (1959), p. 48.

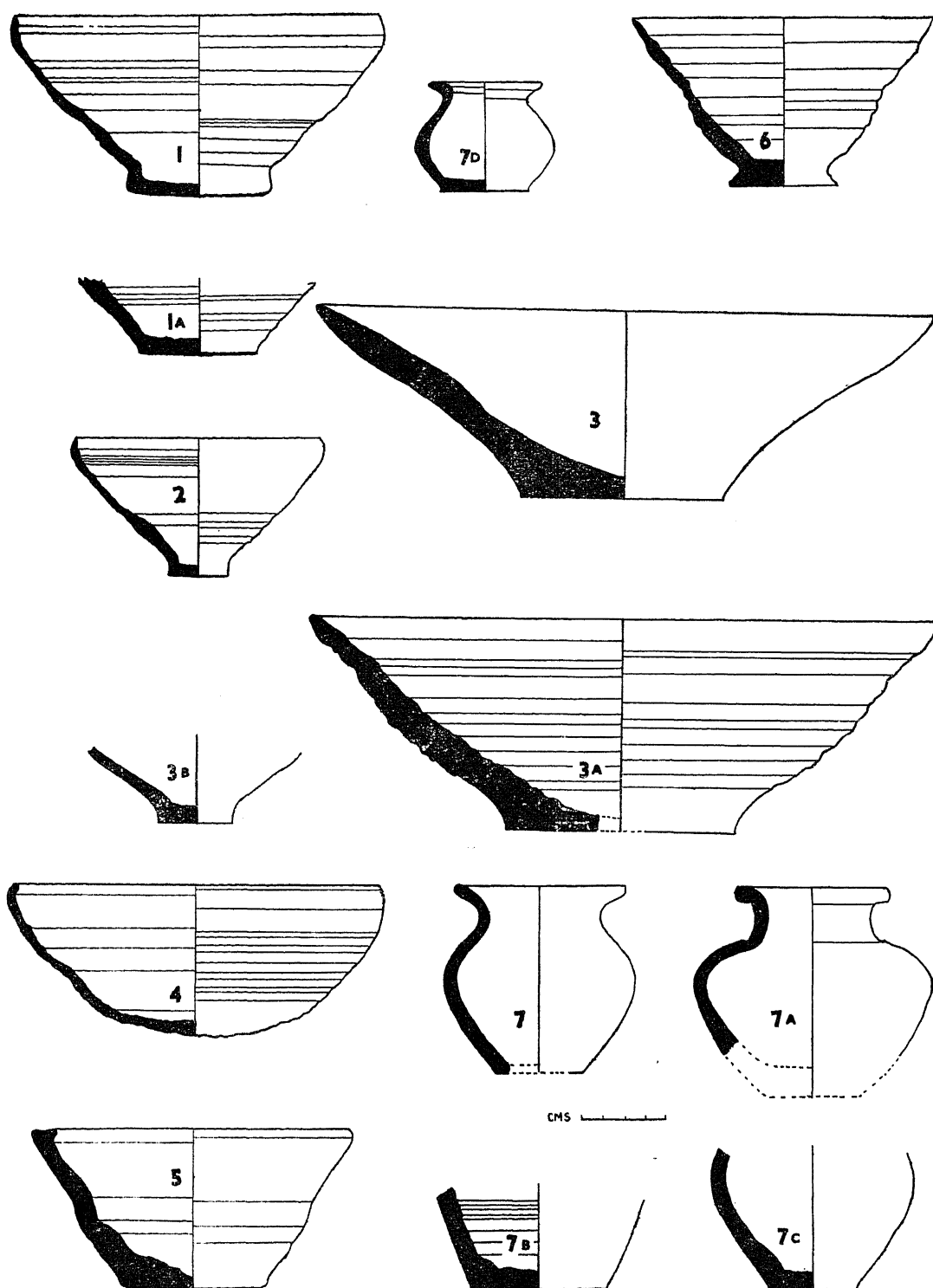


Fig. 11
Pottery Cups and Bowls : Types 1-7

CUPS AND BOWLS

Fig. 11 : 1-7

Type 1 is a knife-edged cup or bowl in red ware characterised by a shallow cup-shaped base with tapering sides and a narrow footing. The fabric is a very coarse gritty clay with fairly good percentage of sand, occasionally overfired leaving blackish patches on the exterior. The base is normally 4·5 cms. in width, with or without marks of focussed groovings, being separated from the wheel by means of a thread. The base generally leaves a sharp ring at the circumference.

Thavaka or *Panati*, by which name this type of cup is known in Maharashtra is of common occurrence on several sites in India such as Nasik, Karad, Kolhapur, Bahal, Nevasa in the Deccan; Tripuri, Sirpur, in Madhya Pradesh; Rairh, Sambhar, Bairat in the former Jaipur State; Mathura, Ahichchhatra, Kosam in Uttar Pradesh and on several other sites in North India. At Kaundinyapura the type occurs in layers associated with the Muslim occupation of the site and generally originates in the post-Mauryan Period, where its occurrence is sporadic. Many cups of this variety were found in Pottery Pit 1 (below the foundation of the Muslim Buildings). These cups were generally used for drinking purposes and were discarded as soon as they were used. The large quantity in which they occur confirm the practice mentioned by Hiuen Tsang.¹ *Uchchhishtha* or once used earthen vessels are discarded and thrown away even in modern times.

Variant 1A differs from the parent type in having a large flattish base and thicker walls with a heavy bottom. Its fabric is the same coarse red-ware with a brick-like appearance. It occurs in the same context as Type 1.

Type 2 is another cup with a very sharp knife-edged rim, tapering walls and a flat base with focussed groovings. The walls have a number of wheel striations. The clay is very coarse with a dull brown slip with marks of overfiring. It occurs in layers 4-5 associated with the Muslim buildings at the site in a fairly large number.

Type 3 is an unusually large dish or a receptacle with flaring sides and corrugation marks on the body. It has a flat base which seems to have been paired off with a sharp knife leaving a few marks on the surface. Its fabric is the same gritty clay with a large amount of lime and large grits. The receptacle is treated with a red paint in the interior and a considerable portion of the walls near the rim on the exterior. The vessel is very well fired and treated with a light brownish slip before painting. The type is confined to the Muslim layers only and was very rarely used. One complete dish and a few fragments were associated with Pottery Pit 1 along with the Variant 3A.

Variant 3A differs from Type 3 in having a flat base with a prominent ridge and was separated from the wheel by means of a thread. The red slip is confined to the interior only and does not extend outside. The rim also shows a sharp outline and is not blunted as in Type 3. The fabric is the same as Type 3.

Variant 3B is the base of a similar flat-bottomed bowl. The fabric is the same as Type 3.

Type 4 is another cup or a *Vadga*-shaped bowl characterised by a sharp incurved rim, tapering walls with corrugations and a non-descript rounded base. The fabric

¹ Beal, *Buddhist Records of the Western World*, I, p. 77; *On Yuan Chwang's Travels* (Ed. Rhys Davids), I, p. 152.

is a coarse clay with a dull yellowish-brown slip with a clayee wash, and contains a large amount of lime as the degraissant. It is very well fired. It occurs sporadically in Period IV at the site associated with the Satavahana layers.

Type 5 is a unique red-ware bowl, a variant of Type 2, distinguished by a flattish shallow grooved rim, thick tapering walls and a shallow cup-like depression effected by the pressing of the thumb while the vessel was on the wheel. The fabric is brick-red clay with medium grits treated with a pale black slip or a clayee wash all over. The Type is restricted to the Muslim layers at the site.

Type 6, another variant of a bowl of Type 2, is distinguished by the sharp shapeless rim with a knife-edge, tapering walls with a bulge in the middle and a splayed base with focussed groovings. Its fabric is the coarse gritty clay associated with the normal bowls of Type 2. It is very well baked and treated with a clayee slip. The ware is confined to the Satavahana layers at the site and occurs in a fairly large quantity.

Type 7 is a small *Gadu*-shaped vessel, with a flat bottom, rounded body, a constricted neck and a flaring out-turned rim. Its fabric is a coarse gritty clay which turns pink on firing. It has a reddish slip on the exterior while the interior is unslipped. This vessel occurs very sparingly in layers 6 and 7 of Period IV associated with Satavahana coins.

Variant 7A is another *Gadu*-shaped vessel differing from the parent type in having a high neck and a thick square rim and a sharp carination at the shoulders. Its fabric is the same as Type 7 but contains a large quantity of chopped straw added for strengthening the walls. It is treated with a pale red slip on the exterior and occurs very sporadically.

Variant 7B is similar to the parent type and is distinguished by the number of corrugations in the interior. Fabric same as Type 7.

Variant 7C represents the flat base of a *Gadu*-shaped vessel similar to Type 7, but differs from it in having straight sloping walls. Its fabric is an extremely coarse clay with a large amount of lime. The exterior is treated with a pale red slip. The vessel was subjected to inverted firing which leaves a sooty-black surface in the interior and identical marks on the exterior for a considerable portion. This vessel is associated with the Satavahana layers at the site and is very sparcely distributed.

Variant 7D is another flat but narrow base of a *Gadu*-shaped vessel similar to Type 7 having a rounded body. Its fabric is identical with the coarse clay associated with the knife-edged bowls of Type 6 with a dull slip. It is indifferently fired and leaves a few black marks at the base. Like Type 8 it is associated with Satavahana layers and is sparcely distributed.

Fig. 12 : 8-16

Type 8 and its variants are large round bottomed vessels with wide mouths and thick rims. From the soot stains appearing on many of them these served as cooking vessels. These were restricted to the Satavahana layers and were exclusive to Period IV.

Type 8 is characterised by the thick walls and a very heavy bottom and a slightly out-turned rim. Its fabric is a gritty clay containing much chopped straw and lime as the main degraissant. It is a very well baked and sturdy vessel having a pale brownish slip.

Variant 8A is identical with the main type in the fabric of the clay but is distinguished by the square rim with a slight depression on the upper portion and two shallow incision marks on the waist. The vessel is treated with a red slip on the rim and portion of the neck. It belongs to the Satavahana Period.

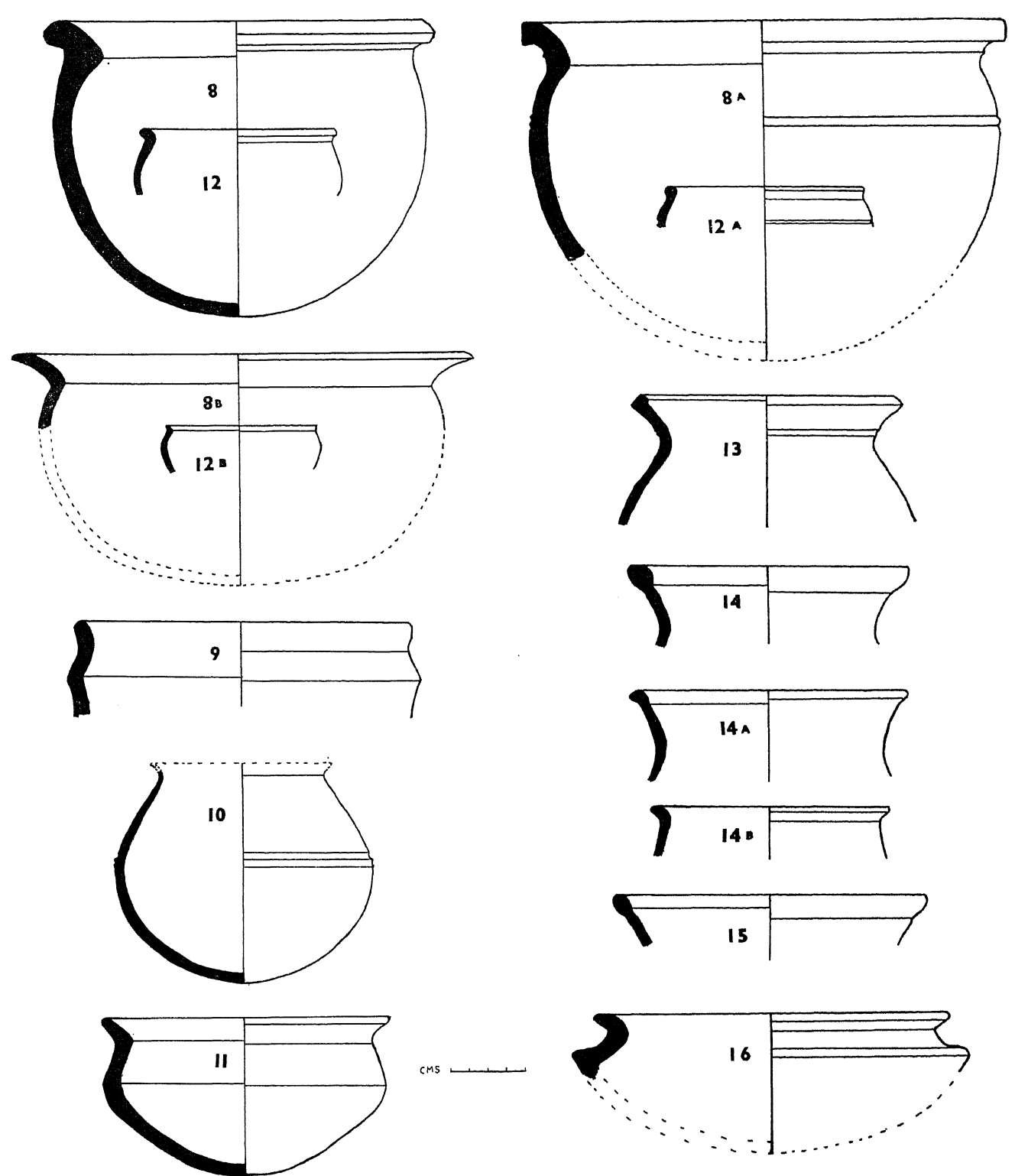


Fig. 12
Pottery Kundas and Vadgas : Types 8-16

Varient 8B is the rim of a similar vessel, with a splayed out rim and thin walls. The clay used is very light, pinkish red on burning and contains mica in an appreciable quantity. The vessel shows marks of firing and was apparently used for cooking purposes.

Type 9 is a rim of a fragmentary vessel with a sharp carination. The exterior of it is unslipped but the interior bears a pale chocolate slip of rare occurrence at the site. The clay is gritty and contains much lime and is extremely well baked. From a late Satavahana level.

Type 10 is a rare round-bottomed vessel with very thin walls. The rim is missing. Its fabric is a well burnt red clay with a bright red slip on the exterior. It is associated with layers of the late Satavahana Period and is very scarce.

Type 11 is a unique *Handi*-shaped vessel with a blunt out-turned rim and a carinated body with round bottom. Its fabric is a coarse clay of large grits. The interior bears a dark grey slip while the exterior is treated with a pale brown slip all over. Repeated heating to which the vessel was subjected has destroyed the slip in several places both in the interior as well as the exterior. A red *geru*-paint was smeared over the rounded base after the vessel was used for some time, perhaps for protection from over-heating. In this respect this vessel is unique though it represents one of the most common shapes for *Handis* used even now for cooking in India. The vessel was obtained in the Muslim layers at the site.

Types 12 and 12A-B are the rims of very small bowls with indeterminate bodies and belong to a class of black ware which occurs sporadically in the Satavahana layers at the site. Type 12 represents a small cup with a stunted rim which projects slightly. It bears a burnished slip in the interior but the exterior is very dull in texture. Varient 12A is similar cup with a groove on the belly, while Varient 12B is characterised by extremely thin walls with the slip on the exterior only.

Type 13 is large *Ghada*-shaped vessel with a high neck and a small incurved square rim. The walls are thin. Its fabric is a coarse light clay which turns pale drab red on burning. Its exterior is treated with a clayee slip with marks of firing. From the Mauryan layers.

Type 14 is the neck of a similar red-ware vessel with a dark chocolate slip in the interior and a pale red slip on the exterior. The walls are extremely thin with a triangular blunt rim. From the Mauryan strata.

Type 14A is the neck of a similar thin-walled vessel made from well levigated clay and having a dull chocolate slip on the exterior. The vessel was probably burnished before firing. Associated with Muslim layers at the site.

Type 14B is a rare rim of a bowl with vertical walls. It is made from a very well levigated clay and treated with a bright burnished red slip all over. From Late Satavahana levels.

Type 15 is a rare rim of a dish with flaring sides. Its fabric is a coarse gritty clay containing sand and lime. It is treated with a pale brownish slip on the exterior only. Satavahana.

Type 16 is a rare rim of a *Handi*-shaped vessel with a very sharp carinated ridge on the waist. Its fabric is a very well levigated clay which turns pink on firing and is treated with a pale red slip in the interior and up to the carination on the exterior. The vessel is well fired and is extremely sturdy. From an early level of the Mauryan Period.

Fig. 13 : 17-35

Type 17 is a wide mouthed vessel or a *Ranjan* of common red-ware distinguished by a thick rim and tapering sides. It bears a bright red slip all over. From Satavahana levels.

Type 17A is a similar vessel with a dull brownish slip from the Muslim levels where it occurs in very large quantities.

Type 18 is the neck of a *Ghada*-shaped vessel of a common red-ware bearing reddish slip on the exterior and up to the rim in the interior. The ware occurs in a large quantities in the Satavahana layers and only sporadically in the Mauryan strata.

Type 19 is a high-necked vessel of identical fabric as above Types 17-18, characterised by a beak-shaped rim. It has a reddish slip on the exterior and up to a considerable portion near the neck in the interior. Late Satavahana.

Type 20 is large-mouthed vessel with a blunted shapeless rim and thin walls. Its fabric is an unusual chocolate ware with a burnished slip all over. It is associated with Late Satavahana layers at the site.

Type 21 is a common red-ware vessel with a short rim. Identical in fabric as Types 17-19. The sherd illustrated belongs to Late Satavahana Period.

Type 22 is a rare chocolate slipped rim of a jar belonging to the Mauryan strata. Its fabric is a coarse gritty clay with a large amount of lime.

Type 22A is a red-ware vessel of identical type with a reddish slip all over. The ware is a sturdy one and the slip has disintegrated considerably. From the Mauryan levels.

Type 23 is a rim fragment of a large *Ranjan* with a chocolate slip identical with Type 22.

Type 24 is a rim of the common red-ware associated with the Mauryan layers at the site.

Type 25 is another rim fragment of identical fabric and associated with the Mauryan layers. Common red-ware with dull reddish slip.

Type 26 is another rim of the chocolate ware with a dull slip from the Mauryan layers. The fabric is identical with Types 17-19.

Type 26A of identical fabric as above is characterised by the club-shaped rim and thin walls.

Type 27 is a rim fragment of a vessel with flaring sides and is characterised by the triangular section. Common red-ware with a dull red slip on the exterior and up to the carination on the neck. From upper levels of the Satavahana strata.

Type 27A is similar to Type 27 in all respects and is distinguished by the short neck. Satavahana.

Type 28 is a club-shaped rim. The shape of the neck and the body are indeterminate. Chocolate slipped ware of Late Satavahana Period.

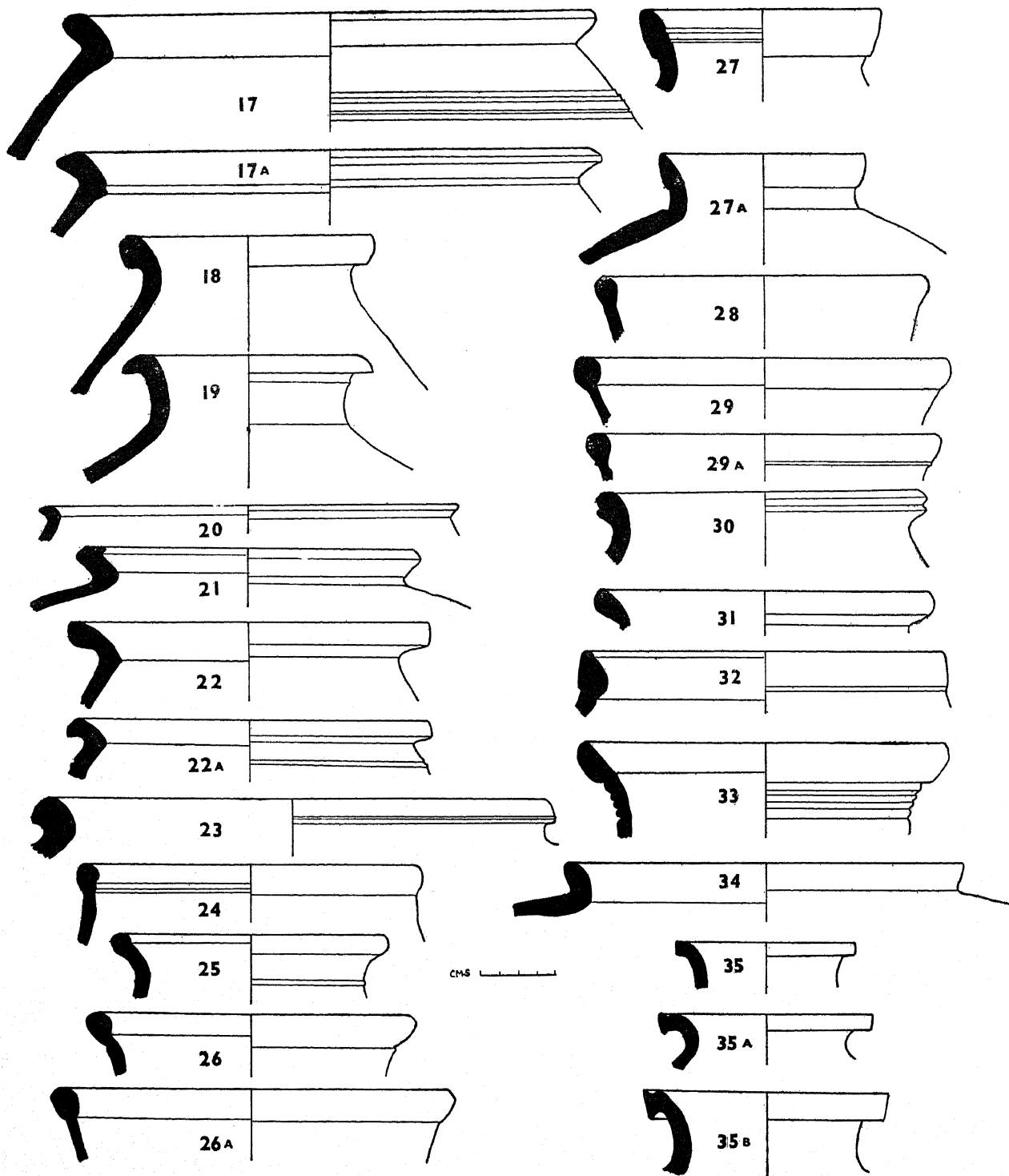


Fig. 13
Pottery Necks of Ranjans and Gharas : Types 17-35

THE POTTERY

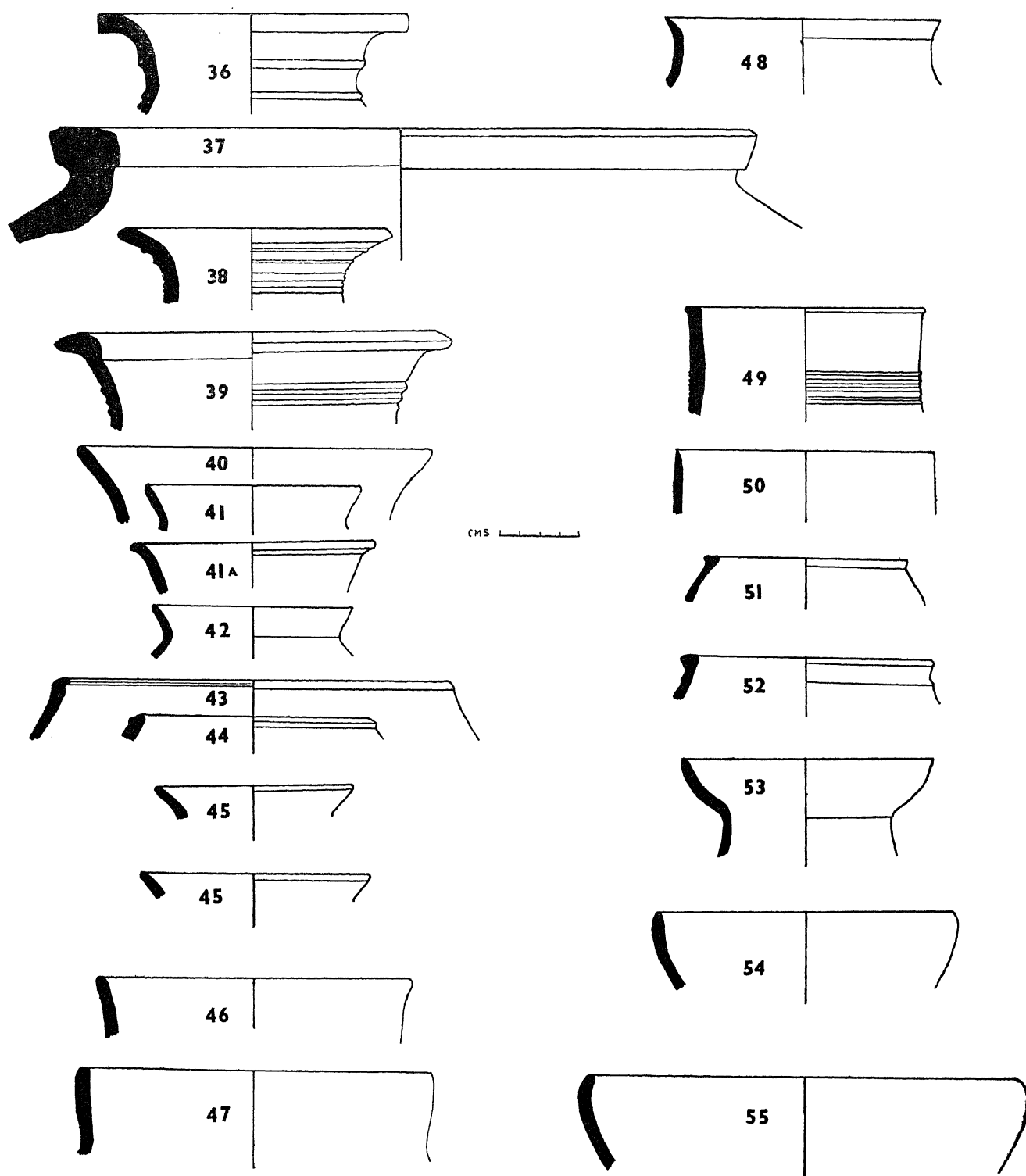


Fig. 14
Pottery Necks of Vessels : Types 36-55

Type 29 is a rim of an identical vessel distinguished by a club-shaped rim. Disintegrating reddish slip on the exterior. Associated with Late Satavahana levels and of sporadic occurrence in the Mauryan strata.

Type 29A represents another rim of identical fabric and from the same layers.

Type 30 is a rare rim characterised by a double carination with a beaded grooving. The fabric is a well-burnt clay which turns pale red on burning. Even slip or a clayee wash of same colour. From the upper levels of Late Satavahana Period.

Type 31 is a rim fragment with signs of indifferent firing. Pale brown slip on the exterior. From Early Mauryan layers.

Type 32 is a rare rim with a prominent grooving at the top, tapering body with a bulged surface in the interior. From same levels as above and sporadically represented.

Type 33 is a rim fragment of a chocolate slipped ware associated with Late Satavahana levels, and is characterised by a number of corrugations on the neck. The rim has a slight sunken surface in the interior. Coarse fabric with small grits and mica particles.

Type 34 is another rare rim with a very short neck. Its fabric is a pale chocolate ware with a deep chocolate slip on the exterior and up to the carination inside. Associated with Muslim layers.

Type 35 is a common red-ware neck with a square rim slightly out-turned. Late Satavahana Period.

Type 36A is similar to Type 35 characterised by a deep groove on the upper surface of the rim. From Satavahana layers.

Type 35B is a similar vessel having a sharp square rim with a prominent groove at the base, which is an unusual feature in the pottery from Kaundinyapura. The neck is tall. The fabric is a well-levigated clay with chopped straw and has a pinkish slip on the exterior and up to the neck in the interior. From a Late Satavahana level.

Fig. 14 : 36-55

Type 36 is a neck of *Ghara* with a flaring square rim from the Mauryan levels. Its fabric is a coarse clay with a dull chocolate slip on the interior and a deep slip of the same shade on the exterior the latter disintegrating at places. The vessel is very well fired.

Type 37 is thick rim of a large storage jar from the Late Satavahana levels. The vessel is wheel-made and the fabric is a coarse pinkish clay with a clayee wash for smoothening the surface.

Type 38 is a flaring rim of a *Ghara*-shaped vessel with a number of corrugation marks on the neck. Dull chocolate slip in the interior with a deep wash on the exterior. Early Mauryan levels.

Type 39 is the rim of a chocolate slipped vessel with a number of corrugation marks on the exterior of the neck and is similar in fabric to Types 22, 33, 34. From Early Mauryan strata.

Types 40-41 are the necks of small jars with an indeterminate body which occur sporadically in the Satavahana layers and rarely in the Mauryan levels at the site.

Type 40 is a blunted rim. Chocolate slipped ware of the Satavahana Period. The fabric is coarse with an amount of lime.

THE POTTERY

Type 41 is a rare rim of the Mauryan Period, having a pale brownish slip in the interior and a dark slip of the same shade on the exterior.

Type 41A is similar to Type 41 above, and differs from the main type in having a burnished slip all over. Satavahana.

Type 42 is a flaring rim of a small short-necked vessel from the Muslim layers at the site. Its fabric is very coarse and is unslipped. The walls of the vessel are comparatively thinner.

Type 43 is a rare black-slipped vessel belonging to the Satavahana layers. Its shape is indeterminate. It is very coarse in the underside but has a very fine burnished slip on the exterior.

Type 44 is an extremely rare fragment of a short necked vessel with the sides tapering inwards and rather unusual amongst the vessels from Kaundinyapura. The clay is very well levigated, hard baked and bearing a dull reddish slip. The sherd belongs to the Muslim layers but there is a possibility of its being a stray from the Satavahana layers, similar sherds being known from Nasik.

Type 45 is similar to Types 40-41 being a flaring rim of a large vessel with thin walls. Chocolate-slipped ware of the Late Satavahana Period.

Type 45A is similar to Type 45 and represents a small piece from the rim of a small pot. The pottery is a red-ware with a very highly burnished slip simulating the red-polished ware from the Satavahana sites in the Deccan. Satavahana Period.

Type 46 is a small fragment of a rim belonging to the Satavahana Period. Pale reddish slip. Gritty fabric with a sprinkling of mica.

Type 47 is another fragment of identical type as 46 above. Red-ware with an amount of mica in large flakes. Satavahana.

Type 48 is a rare well-shaped rim of a high necked vessel, characterised by a highly burnished slip all over. From unstratified layers in Muslim strata. Probably belonging to the Late Satavahana Period.

Type 49 is an extremely rare rimless vessel with vertical walls and has a number of corrugation marks on the exterior. Its fabric is a coarse gritty clay, indifferently fired and leaving a number of marks on the body. It is treated with a pale red or dull chocolate slip which has disintegrated considerably. From Satavahana layers.

Type 50 is another fragment with vertical wall and a sharp everted edge. The clay is very finely levigated and treated with a highly burnished brownish slip. From indeterminate levels of the Muslim Period, but probably an early piece.

Type 51 is another small fragment from the Satavahana layers and represents the rim of a pot with a tapering body. The fabric is medium, unslipped in the interior but bearing a very highly burnished pale chocolate slip outside.

Type 52 represents the portion of a flaring rim with a beak-like projection from the Satavahana layers. The fabric is a coarse gritty clay with a pale brownish slip all over. Occurs sporadically in the Satavahana layers but is common in the Late Satavahana levels at the site.

Type 53 is a rare rim of a vessel having a constricted neck with tall sides and a cup-shaped ridge near the rim. The walls are very thin. Its fabric is a red-ware having brownish slip all over, highly burnished but indifferently fired. From the Satavahana layers but common enough in the Mauryan layers.

Type 54 is a fragment of a bowl with a shapeless rim with a rounded base. The fabric is a coarse clay which has a soot slip in the interior due to inverted firing. The technique was followed in the earlier phases at the site in different ways, but the present sherd belongs to the Late Satavahana Period.

Type 55 is another fragment of a rimless bowl with thin walls. The fabric is a coarse gritty clay with red slip all over. The sherd is associated with Late Satavahana Period at the site, but represents type which was more common in the earlier period.

Fig. 15 : 56-67

Types 56-67 represent a class of pottery which is distinguished by the profuse use of mica as a constituent of the clay. This is apparently done to retain the heat in the cooking vessels. The mica particles are sometimes as large as 16 pieces to an inch and in cases the clay acts as an additive only. The later type of vessels are prone to break in flakes under damp condition of the soil and several sherds were found which broke at the touch only. Such sherds were comparatively few in number. As regards their distribution it was found that they occur very sparingly in the Late Satavahana Period, common enough in the Satavahana strata and appeared very sporadically in the lower levels. Flaring rims are all that have survived amongst the shapes and it is not possible to determine the completed shape.

Type 56 is a short flaring rim with a sharp outline and a medium-beaded line at the base. The clay is pinkish red and the mica is used as a slip only on the exterior of the vessel. From Layer (6).

Type 57 is a large-mouthed vessel with a flaring rim and had a rounded base resembling a Handi. The fabric is a coarse clay with medium grits and had a chocolate slip on the exterior while in the interior the surface of the vessel is black. Mica is profusely used in the interior and in small quantities on the exterior of the vessel. Late Satavahana.

Type 58 is characterised by the thickness of the flaring rim, a blunted edge and use of mica as a slip on the exterior only. Fabric same as Type 56 from Mauryan layers.

Type 58A is an identical sherd with a sharp edge, as preceding type.

Type 58B is a similar sherd but characterised by a curved outline of the neck. Satavahana.

Type 58C is a variant of Type 58 marked by the profuse use of mica giving the vessel a very silvery appearance. The micaceous slip is very thick. Satavahana.

Type 59 is a black-ware vessel having a thick flaring rim. Mauryan.

Type 60 is similar to Type 58C but has a short rim of identical fabric. Late Satavahana.

THE POTTERY

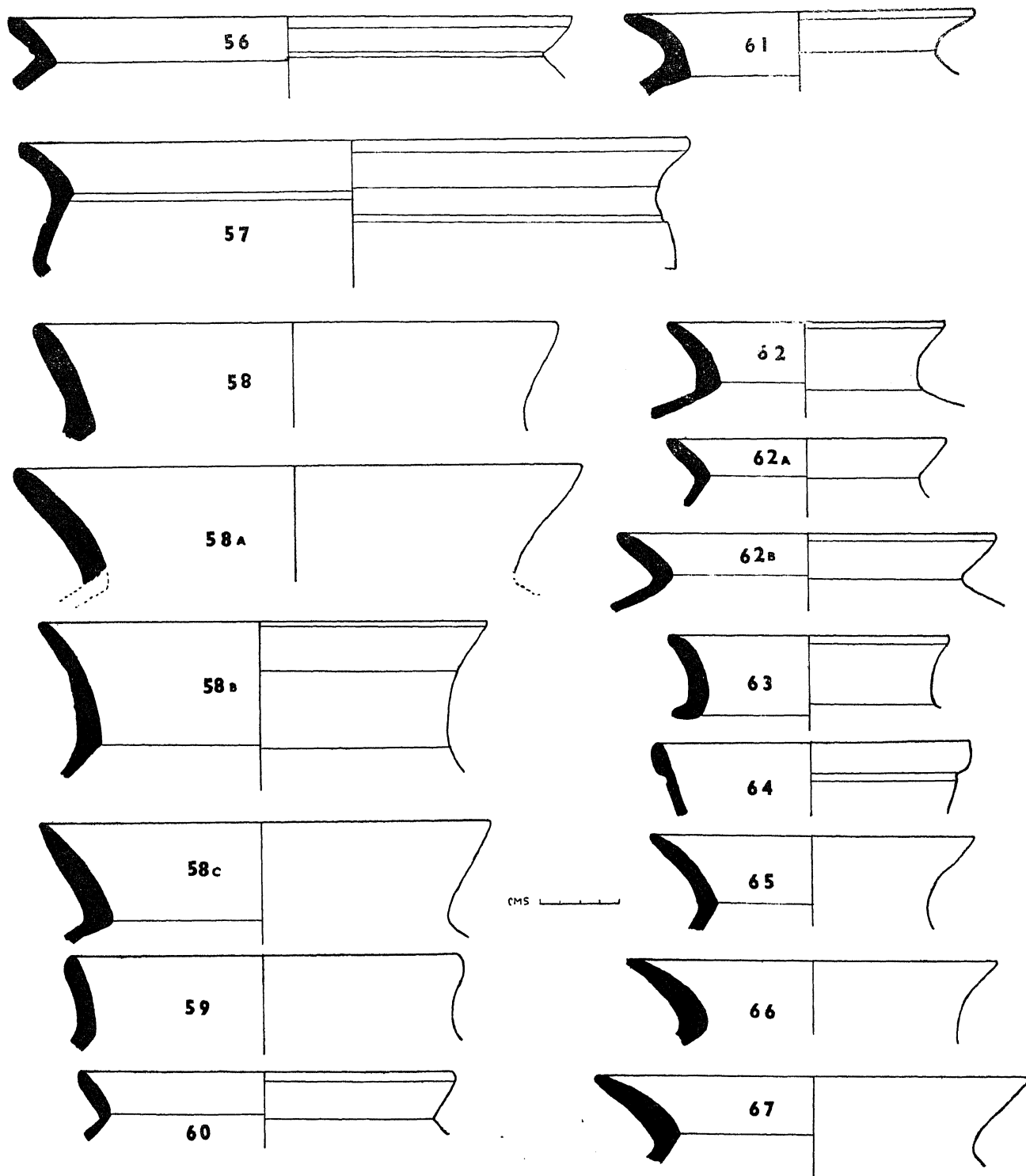


Fig. 15
Mica-slipped Pottery : Types 56-67

Type 61 is characterised by the use of mica as a slip and as a degreassant in body fabric of the vessel. It is very thick at the neck. From upper layers of Late Satavahana Period.

Type 62 is similar in all respects to Type 61 except that the walls of the vessel seem to be very thin. From upper levels of Late Satavahana Period.

Type 62A is of similar fabric from the same stratum.

Type 62B is identical with prominent grooving at the neck.

Type 63 has an extremely coarse fabric very rough in feel with a sprinkling of mica on the exterior. The clay burns pale red and has a number of marks due to over-firing.

Type 64 is a rare neck of a water jar, of black ware with a sprinkling of mica on surface. From Layer (6) of sporadic occurrence at the site.

Type 65 is complete rim of a vessel with great profusion of mica in it. The broken portions show that small particles of mica were mixed in the clay itself. Mauryan.

Type 66 is a flaring rim similar to Type 65 with marks of over-firing. Coarse clay with mica. From Layers (14-15) at the site.

Type 67 is a similar rim with mica slip on the exterior of the vessel only. The interior is generally unslipped but very minute particles of mica as the constituent of the clay are visible in the fabric. From Layer (14).

Fig. 16 : 68-79

Types 68-74 represent various examples of lids or jar-covers from various layers and comprise of four main varieties and variants.

Type 68 is jar-cover with a conical top having a flat surface, a prominent flange in the middle and a tapering wall for fitting into the vessel. The fabric is a coarse gritty clay like brick and bears a dark red slip all over. The type occurs very profusely in the Late Satavahana levels and sporadically in the Muslim layers.

Variet 68A differs from the main type in having a beak-like projection for the flange and the lower end of the cover has a number of wheel striations. The lower end of the jar shows many marks of firing. Mauryan.

Variet 68B differs from the main type in having a beaded ridge at the base. Muslim.

Type 68C is a similar cover with a short rim having vertical sides. Late Satavahana.

Type 69 is a complete jar-cover having a domical cover with thick walls for the top and a very short rim fitting into the lower end. It has a sharp knife-made groove in the interior. Pale unslipped clay with a drab wash all over. Muslim.

Variet 69A is a fragment of a similar cover with a very short flange and high walls for the lower rim. Pale yellow clay with a reddish slip on the exterior. Late Satavahana.

Variet 69B is a similar domical cover of identical clay as Type 69A and has very prominent groovings in the interior. Reddish slip on the exterior. Late Satavahana.

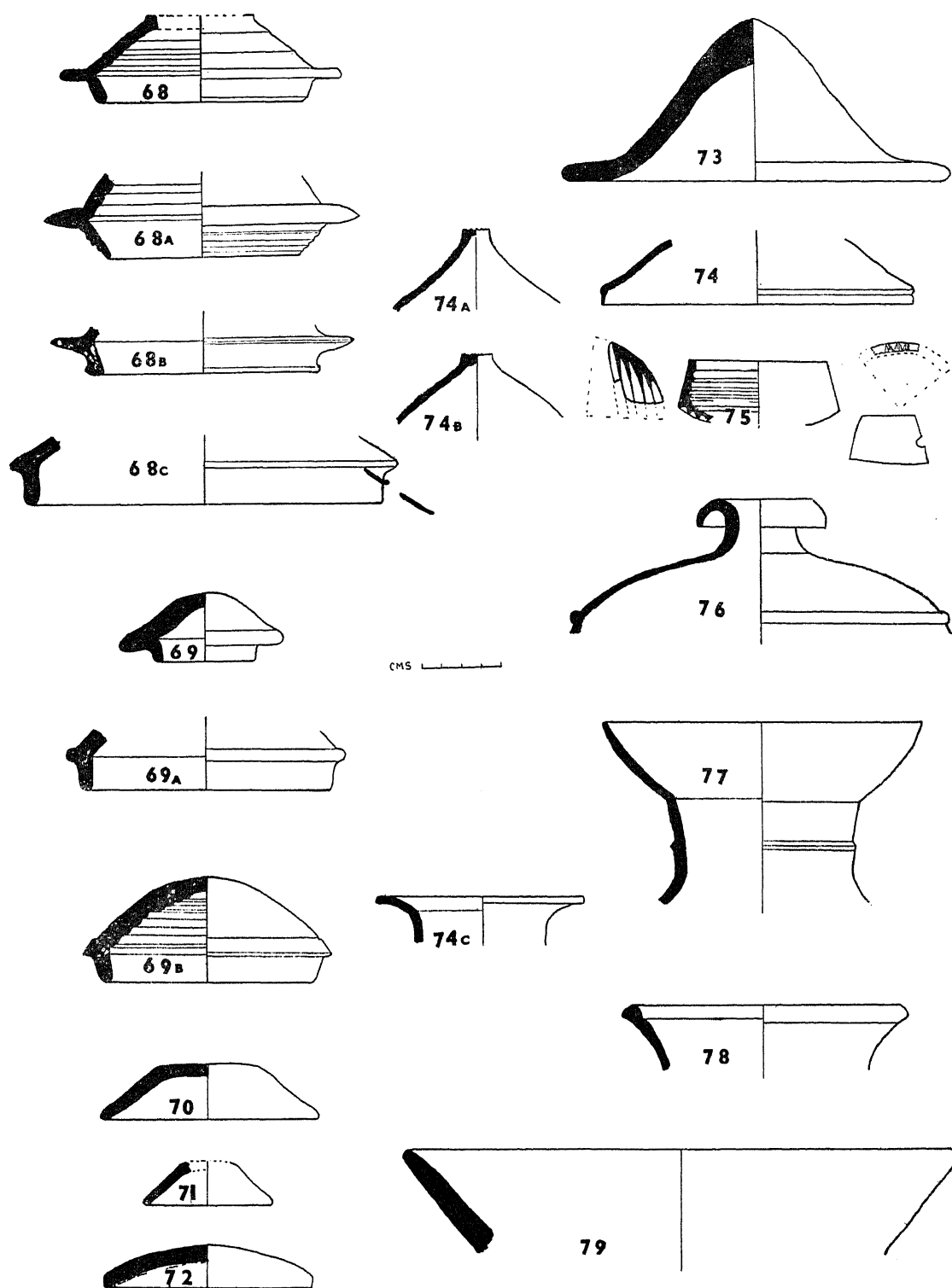


Fig. 16
Pottery Lids and Jar-covers : Types 68-79

Type 70 is flat-topped jar-cover having flaring sides with short height. In its inverted form the type can also be classed as an oil lamp commonly used even today. The clay used is very coarse, gritty and is treated with a very thick black slip in the interior of the dome and up to the basal carination outside. Being broad in shape it is classed here as a cover. Mauryan.

Type 71 is a similar cover of small dimensions and has a number of wheel marks. Gritty clay with a clayee wash. Late Satavahana.

Type 72 is a flat saucer-shaped cover of an extremely coarse gritty clay with chopped straw. Pale yellow clay with red slip. Late Satavahana.

Type 73 is an extremely rare jar-cover with a high domical top, triangular in section and a wide flange at the base. The clay is very well levigated with lime and chopped straw as the degraissants and is treated with a pale yellow clayee slip all over. The interior is very indifferently made by pinching surplus clay and not well finished. The shape is characteristic in some megalithic wares from Brahmagiri¹ and from Ranjala in Khandesh.² This rare vessel was found in Layer (11) at a depth of 16 ft. in Trench B3.

Type 74 is another specialised jar-cover of extremely thin walls with a short rim and tapering top, the exact shape of which is not known. It is a black-ware vessel with a fine smooth black slip on the exterior and is very well finished. Period I.

Type 75 is an extremely rare terracotta object, probably a skin rubber having large regular grooves on its underside and zigzags on the upper surface. Its clay is very well levigated with a dark crackling slip all over. On the short wall there are traces of a large hole probably for hanging the object. Kdn-2 Layer (7). Period II.

Type 76 is probably the upper end of a *Surahi* or a *Khuja*. The mouth is very narrow having a sharply curved top and a very short neck. The waist of the globular body has a prominent beaded grooving at the carination but the lower portion of the belly is missing. The clay is very well levigated and has a red slip all over on the exterior. The mouth was made separately and fitted it to the globular body the joints of which are seen in the interior. A rare Type from Late Satavahana levels.

Type 77 is another extremely rare mouth of a water pot characterised by a very high neck and a bowl-like wide flaring mouth. Its fabric is a very fine well-levigated clay treated with a very smooth yellowish red slip all over. Mauryan.

Type 78 is a short flaring rim of the neck of a similar vessel, with identical clay and slip as in Type 77. Mauryan.

Type 79 is another flaring rim of a vessel characterised by thick tapering walls. Coarse gritty clay with a large amount of chopped straw. Indifferently fired. Period I.

Fig. 17: 80-96

Type 80 is the rim fragment of a large Ranjan or storage vessel characterised by a triangular rim with a flat top, a feature which is shared by most of the storage vessels encountered in the excavation. The vessel is wheel-made and the fabric is very coarse,

¹ *Ancient India*, No. 4, p. 209, Pl. CVI.

² *Indian Archaeology*—A Review for 1960-61, Pl. XXXIII, B.

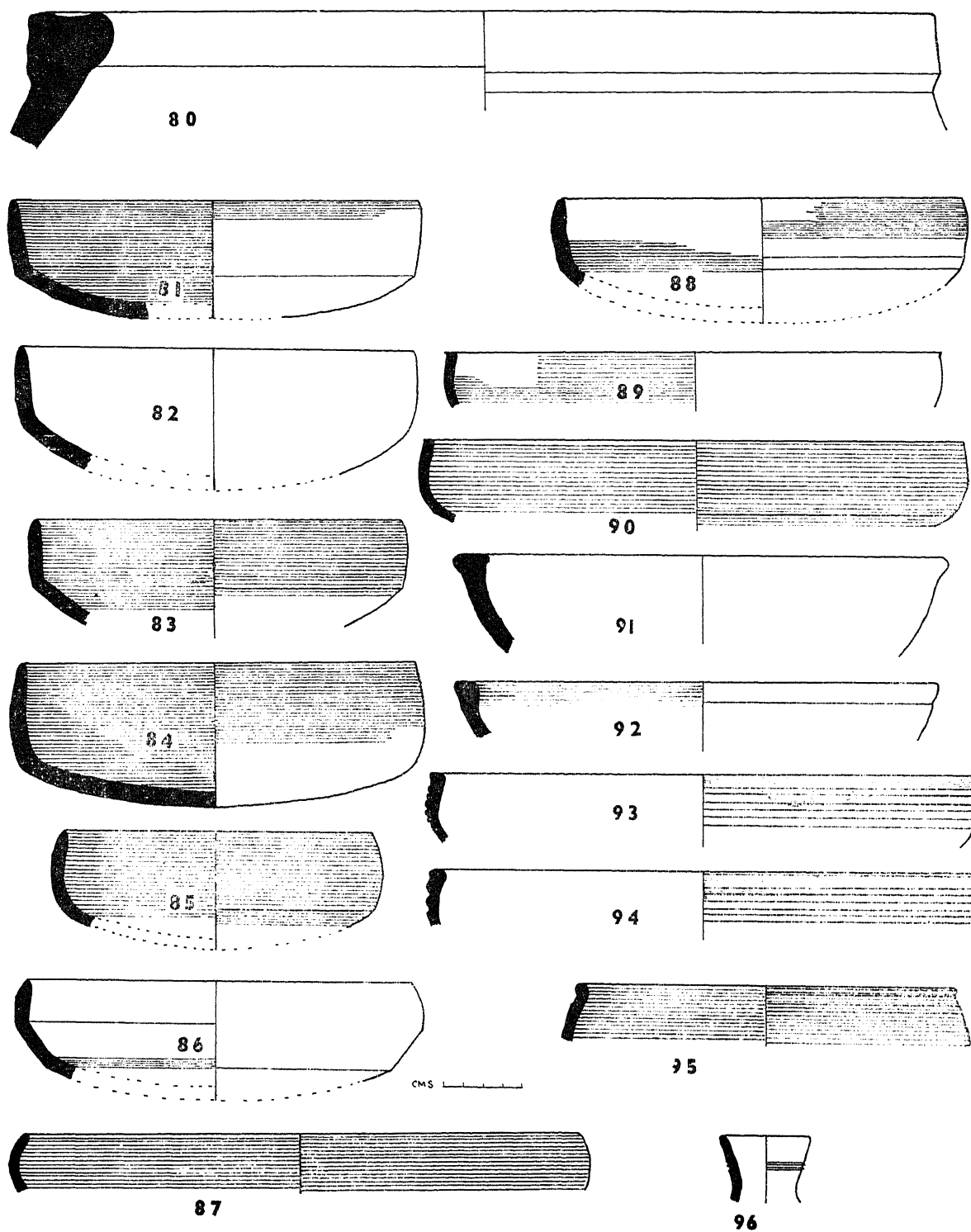


Fig. 17
Late Black-and-Red ware dishes : Types 80-96

gritty and contains a good proportion of chopped straw. It is treated with a reddish slip on the exterior. Ranjans of this fabric were quite common in all the layers at the site and the illustrated specimen comes from B3 Layer (6) belonging to the Late Satavahana Period.

Types 81-95 represent a class of pottery from the upper strata of the excavation. Majority of the vessels were subjected to inverted firing and as such have a very black surface in the interior and up to the rims of the exterior. The black-and-red ware represented by these vessels differs from the megalithic black-and-red ware in a number of ways. Though the treatment is the same the vessels lack the fine smoothly finished black slip which is characteristic of the megalithic pottery and on the other hand show a considerable coarse finish. The interiors have a very pitted appearance and the walls are substantially thick in comparison to the wares of the megalithic fabric. On account of the coarse fabric the vessels have a very rough section in the cuts as against the uniform settling noticed in the megalithic wares. The vessels are generally very crudely finished.

Type 81 represents the normal class of the dish, having thick vertical walls and a sharp carination at the base. B3 Layer (5).

Type 82 is a plain red-ware vessel from the same layers as Type 81 and differs from it by not being subjected to inverted firing. The clay is identical as Type 81 having a pale red slip all over. B3 Layer (5).

Type 83 is a coarse black-and-red ware vessel with a sharp carination at the base and sloping walls. B3 Layer (5).

Type 84 is a coarse black-and-red ware dish with thick walls. D4 Layer (6).

Type 85 is similar to above with a dull black slip. B3 Layer (7).

Type 86 is similar to above but without inverted firing. Pale yellow clay with a pale brown slip all over. Sharply carinated body. B3 Layer (5).

Type 87 is a coarse black-and-red ware dish from B3 Layer (5).

Type 88 is an identical dish with thick walls. Coarse black-and-red ware with an oblique cut near the base. B3 Layer (7), Late Satavahana.

Type 89 is a coarse black-and-red ware. Dish with a flat rim. Smooth slip in the interior. Exterior pale yellow. B3 Layer (7), Late Satavahana.

Type 90 is a coarse black-and-red ware dish with a flattish rim and a carinated body. The interior is treated with a smooth chalky slip. From B4 Layer (7), Late Satavahana (?).

Type 91 is a red-ware vessel with flaring sides and a flattish rim, not common to other layers. B3 Layer (7), Satavahana.

Type 92 is similar to Type 91. Probably a portion of a jar-cover with a blunt triangular rim. B3 Layer (6).

Type 93 is another red-ware vessel characterised by a number of wheel groovings on the neck and having a short pronounced rim. Marks of firing on the exterior. B3 Layer (7), Satavahana.

Type 94 is a variant of Type 93 and differs from it in broad wheel marks. Fabric coarse clay with a reddish slip on the exterior and marks of indifferent firing. B3 Layer (8), Satavahana or Mauryan.

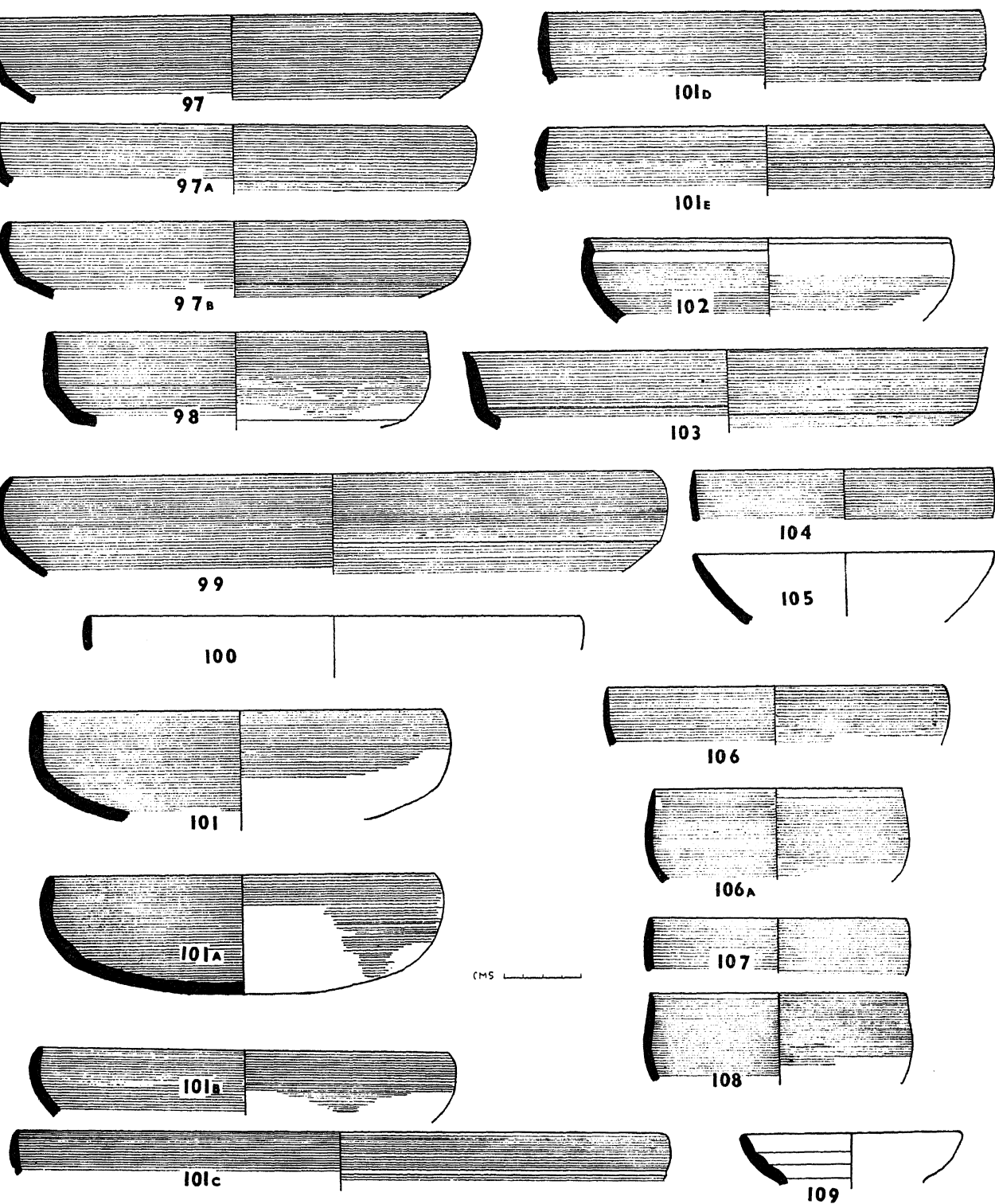


Fig. 18
Late Black-and-Red ware dishes : Types 97-109

Type 95 is a rare black-and-red-ware vessel with a short blunted rim and a curved body. Black smooth slip all over. B3 Layer (8).

Type 96 is an extremely rare funnel-shaped neck of a water-jar, reddish clay with a dark clayee slip all over. Indifferently fired. From Trench B3, Layer (6), Late Satavahana Period.

Fig. 18 : 97-109

Type 97 is a coarse black-and-red-ware dish having sharply angular walls. Gritty clay with chopped straw. B3 Layer (9).

Type 97A is a rim of a coarse black-and-red-ware dish. B3 Layer (9).

Type 97B is another rim of coarse black-and-red-ware dish. B3 Layer (7).

Type 98 is a similar rim of coarse black-and-red-ware dish characterised by a sharp basal carination on the exterior. B3 Layer (6).

Type 99 is a thin rim of a wide mouthed dish of coarse red-and-black ware with a coarse finish in the interior and a smoothened slip on the exterior. B3 Layer (9).

Type 100 is a fragment of a small rim of yellowish pottery, very rarely represented. Well levigated clay with a fine smooth yellow slip with specks of red paint in the interior. D4 Layer (7), Mauryan ?

Type 101 is a thick rim of a coarse red-and-black ware dish. Crudely finished. B3 Layer (6).

Type 101A is similar to above with a sagger base. B3 Layer (5).

Type 101B is similar to above with a pointed rim. Badly fired. B3 Layer (9).

Type 101C is a similar rim with a prominent groove on the exterior. Coarse black and red ware. B3 Layer (8).

Type 101D is a thin rim of coarse red-and-black ware characterised by a groove on the exterior. B3 Layer (5).

Variant 101E is similar with a double groove. B3 Layer (4).

Type 102 is a rare fragment of a rim with a pale chocolate slip and probably mixed with soot or resulting from indifferent inverted firing (?). The edge of the rim is obliquely cut by placing a sharp instrument against it while on the wheel. B3 Layer (8), Mauryan.

Type 103 is characterised by a short flaring rim and a prominent carination at the base. Coarse black-and-red ware. B3 Layer (7).

Type 104 is a short vertical rim of a dish or a bowl of black-and-red-ware, smoothly finished. B3 Layer (7), Satavahana.

Type 105 is a flaring rim of a red-ware vessel similar to Type 77 very smoothly finished. Burnish slip on the interior. B3 Layer (7).

Type 106 is a rim of a black-and-red-ware vessel with a thin smooth slip. Carefully finished. B3 Layer (8). Mauryan.

Type 106A is similar to Type 106. B3 Layer (7).

THE POTTERY

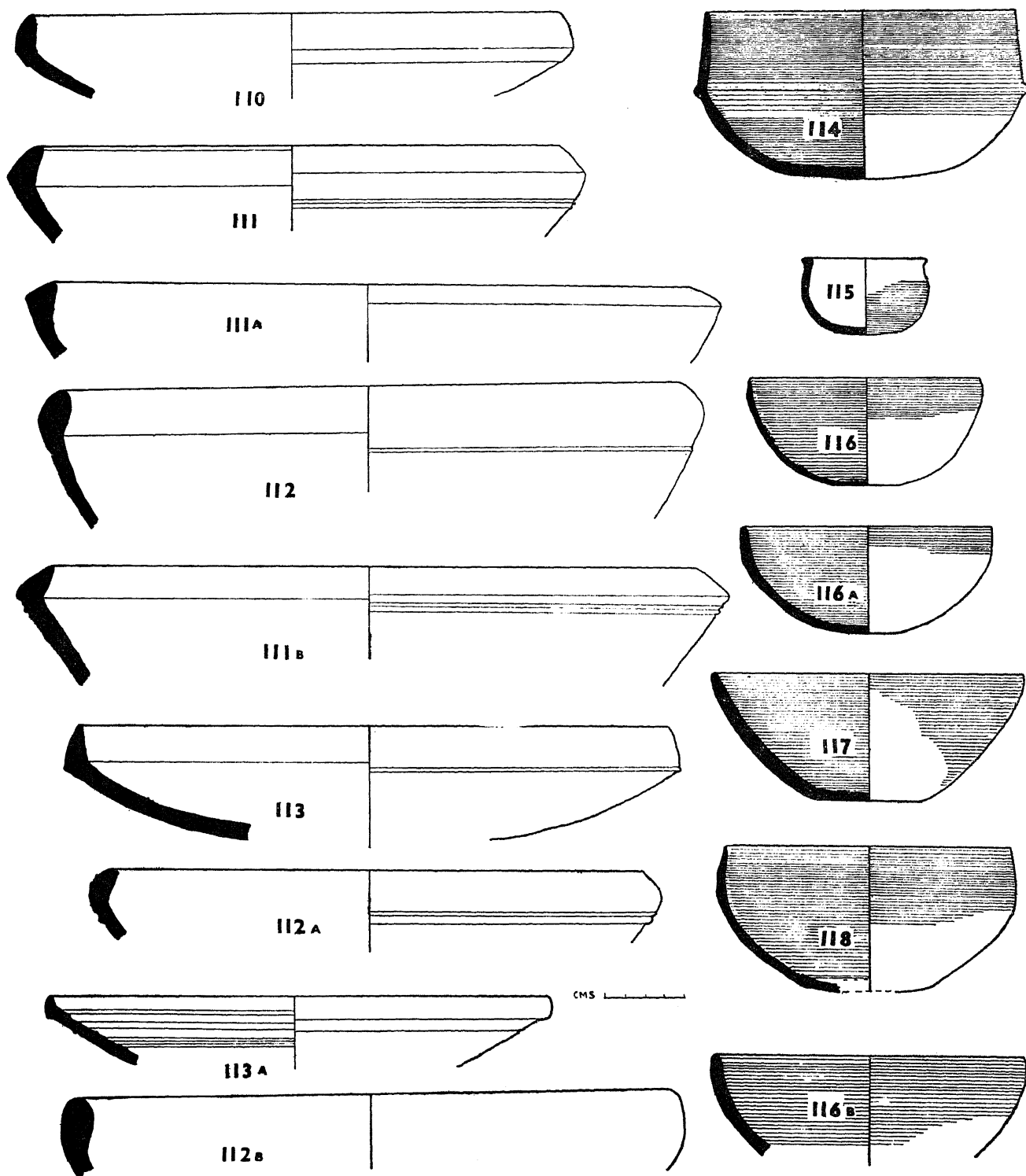


Fig. 19

Pottery Basins and Black-and-Red ware bowls : Types 110-118

Type 107 is a rim of a black-and-red ware bowl, with a oblique cut on the inner face of the rim. Similar to Type 102. Chalky slip in the interior. B3 Layer (8). Mauryan.

Type 108 is a thin rim fragment with a sharp edge, black-and-red ware having a smoothened surface. B3 Layer (9).

Type 109 is a funnel-shaped rim of a red-ware vessel with sharp grooves in the interior. Badly fired. B3 Layer (7).

Fig. 19 : 110-118

Types 110-113 represent red-ware basins of different dimensions and characterised by sharp triangular, club-shaped and inwardly projecting rims. The vessels have sharply angular sloping bodies and probably had rounded or sagger bases. These are generally very well fired and are very sturdy. These occur in all the phases at the site in a fairly good quantity.

Type 110 is a red-ware vessel with a pale reddish slip. The rim projects inwards and has an oval section. B3 Layer (2). Muslim.

Type 111 is a thick rim triangular in section with prominent grooving on the exterior. Red-ware with a bright red slip all over. B3 Layer (2). Muslim.

Type 111A is similar to above but with short rim. B3 Layer (5). Late Satavahana.

Varient 111B is similar to the main type but differs from it in having a sharply curved body and a long pointed beak-like triangular projecting rim. Red-ware with a dark reddish slip. B3 Layer (6).

Type 112 and its varients are characterised by the club-shaped rims and bulging bellies for the basins.

Type 112 has a short incurved rim with oval section and a deep groove on the exterior. Red-ware with a thick bright red slip all over. B3 Layer (6). Late Satavahana.

Varient 112A is a light rim of a basin with a sharp incurved rim and thin walls. Red-ware with an amount of chopped straw. Reddish slip all over. From Trench B3 Layer (8). Mauryan.

Varient 112B is characterised by a featureless blunted oval rim. Very badly fired. Pale yellow clay with a reddish slip. B3 Layer (5).

Type 113 and its Varient 113A are the rims of flattish basins with a rounded base and very sharply pointed incurved rims.

Type 113 is a red-ware vessel containing a large amount of chopped straw in its fabric and is very badly fired. The rim is short and the exterior of the vessel has a deep groove near the carination. B3 Layer (5).

Varient 113A is a similar red-ware vessel with a flattish base and a number of wheel striations in the interior. The clay is identical with the parent type and the rim is comparatively short. Type 113 and the varient may also have served dish-covers for containers.

THE POTTERY

Types 114-118 represent black-and-red bowls from different levels and are characterised by the inverted firing process employed in their manufacture. The clay used for these is generally free from grits in the lower layers, but the vessels from the upper layers have a pitted appearance showing that the fabric was not so good and the clay not well levigated. In firing the clay generally burns pinkish or pale red and portions of the vessels coming in contact with fire are having a very thick jet-black surface. In the lower levels, vessels treated in this manner leave a yellowish and yellow-red surface and generally have a very smooth finish. The difference between the vessels in the upper and the lower strata can be marked in the sections of the pottery also. Those belonging to the upper strata leave very burred and flaky edges on breaking while the vessels of the lower strata have a very hard-baked surface. The basic difference therefore lies not in the method employed for their firing, which is the same in both the cases but in the time taken for their burning. The evidence at Kaundinyapura shows that the black-and-red ware in the lower levels is generally extremely well fired and must have remained in the kiln for a longer time than the ordinary coarse red-and-black wares encountered in the upper layers. The difference can also be attributed to the use of different clays. While the material employed for the megalithic black-and-red ware was extremely well levigated, the coarser specimens generally has a pitted surface and the slip has a tendency to flake off on rubbing or by constant use. In the fabric the essential difference can also be marked in the fashioning of the walls which tend to become very thin in the megalithic wares while those of the coarser fabric are invariably thicker and lack the elegance and shapeliness of the vessels which cannot be attributed to the function or use. In both the types dishes and bowls predominate but the superior quality of the megalithic fabric does not seem to have been successfully imitated during the later occupation at the site. The difference is apparent also in the graffiti appearing on these wares. The coarser black-and-red ware shows that the lines effected tend to have a thick scratch-like effect on the surface of the coarse ware while the graffiti marks on the megalithic pottery are extremely fine, of needle-breadth thickness. This was resultant from the finer fabric of the clay.

Type 114 is a rare bowl of megalithic black-and-red fabric, characterised by a fine thin pointed rim and carinated body and a pronounced ridge on the belly. This unusual feature is not met with frequently in the lower layers at Kaundinyapura. From Trench B3 Layer (10).

Type 115 is a coarse black-and-red-ware bowl with an out-turned rim a short globular body. The interior of this vessel is red and the exterior shows signs of burning and a uniform black soot slip. The small size of the bowl indicates that probably it served as a lid for another vessel treated by inverted firing. B3 Layer (7).

Type 116 is a fine bowl of thin walls, sharp rimmed and a flattish base. Megalithic black-and-red ware. B3 Layer (14).

Type 116A is similar to above in shape but of coarse black-and-red fabric. The interior has a dull crackling black slip; the exterior is blackened up to a small section of the wall. B3 Layer (7).

Type 116B is a coarse black-and-red-ware fragment of a bowl with curved sides. Thick walls. B3 Layer (7).

Type 117 is a coarse black-and-red-ware fragment of a bowl characterised by thick tapering walls and a flat base. Crackling red slip. From D4 Layer (6).

Type 118 is the fragment of a rim of a megalithic black-and-red-ware bowl having a sharp-curved rim, thin walls and a flattish base. B3 Layer (13).

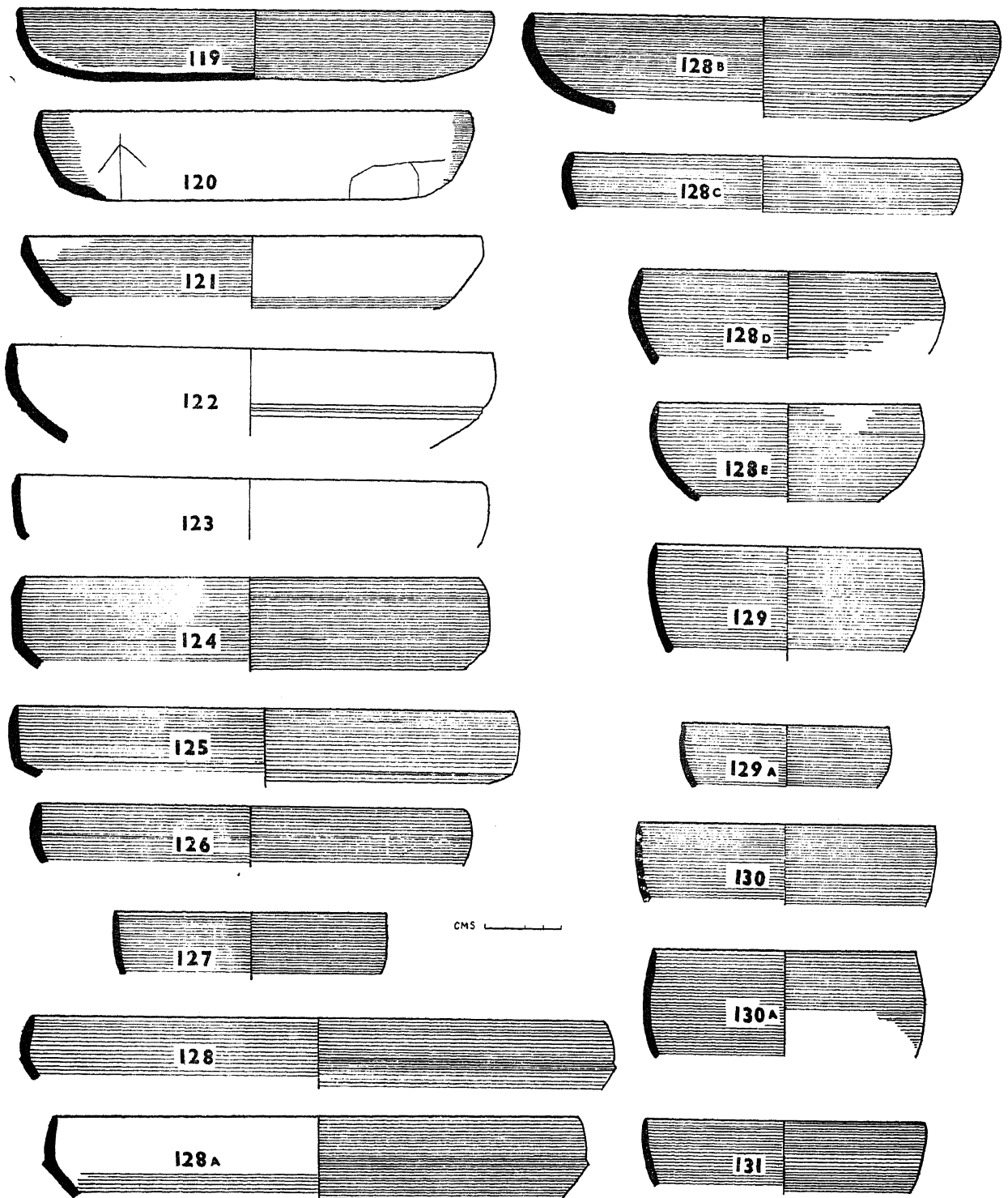


Fig. 20
Megalithic Pottery : Types 119-131

MEGALITHIC POTTERY

Fig. 20 : 119-131

Type 119 is a flat dish of megalithic black-and-red-ware, having a very short curved rim and a sagger base. B3 Layer (15).

Type 120 is a flat dish with a curved rim and a carination on the exterior. Megalithic black-and-red ware. Smoothly finished. The basal carination on the exterior of this dish bears two graffiti consisting of an arrow-mark and a circle at quadrantal points (see below under graffiti on pottery p. 83). B3 Layer (15).

Type 121 is similar with a thick wall and a pointed rim. B3 Layer (14).

Type 122 is a red-ware rim of a large dish with grooving on the exterior from Megalithic layers. B3 Layer (15).

Type 123 is another potsherd forming part of a flat dish with vertical pointed rim with an oblique cut on the exterior. Chocolate slip all over. Trench B3 Layer (15). Megalithic.

Type 124 is a megalithic black-and-red-ware rim fragment characterised by sharp carinations in the interior and at the base on the exterior.

Type 125 is a fragment of black-and-red ware dish of megalithic fabric. The interior of the vessel is treated with a chalky smooth slip. B3 Layer (14).

Type 126 is a rim of megalithic black-and-red-ware dish with a smooth black slip all over. Trench B3 Layer (14).

Type 127 is a vertical pointed rim of megalithic black-and-red-ware. From Trench B3 Layer (14).

Type 128 is a rim of megalithic black-and-red-ware with basal carination treated with a chalky slip; highly burnished. Similar to Type No. 125 above. Trench B3 Layer (14).

Type 128A is identical with Type 128 above. Trench B3 Layer (14).

Type 128B is similar to Types 125, 128 and 128A above, but with sharp curved sides. Trench B3, Layer (10).

Type 128C is similar to above Type 128. B3 Layer (10).

Type 129 is a vertical rim of a megalithic black-and-red-ware bowl. Trench B3 Layer (13).

Type 129A is similar with a slightly protruding beak-like rim and thin walls. Trench B3 Layer (13).

Type 130 is a rim fragment of megalithic black-and-red-ware with thin walls and a pointed rim. B3 Layer (15).

Type 130A is a rim similar to Type 130. B3 Layer (15).

Type 131 is a rim fragment of megalithic black-and-red-ware with a pointed rim. B3 Layer (15).

Fig. 21 : 132-143

Type 132 is a thick megalithic black-and-red-ware fragment of a rim with prominent thick groovings on the exterior. B3 Layer (11).

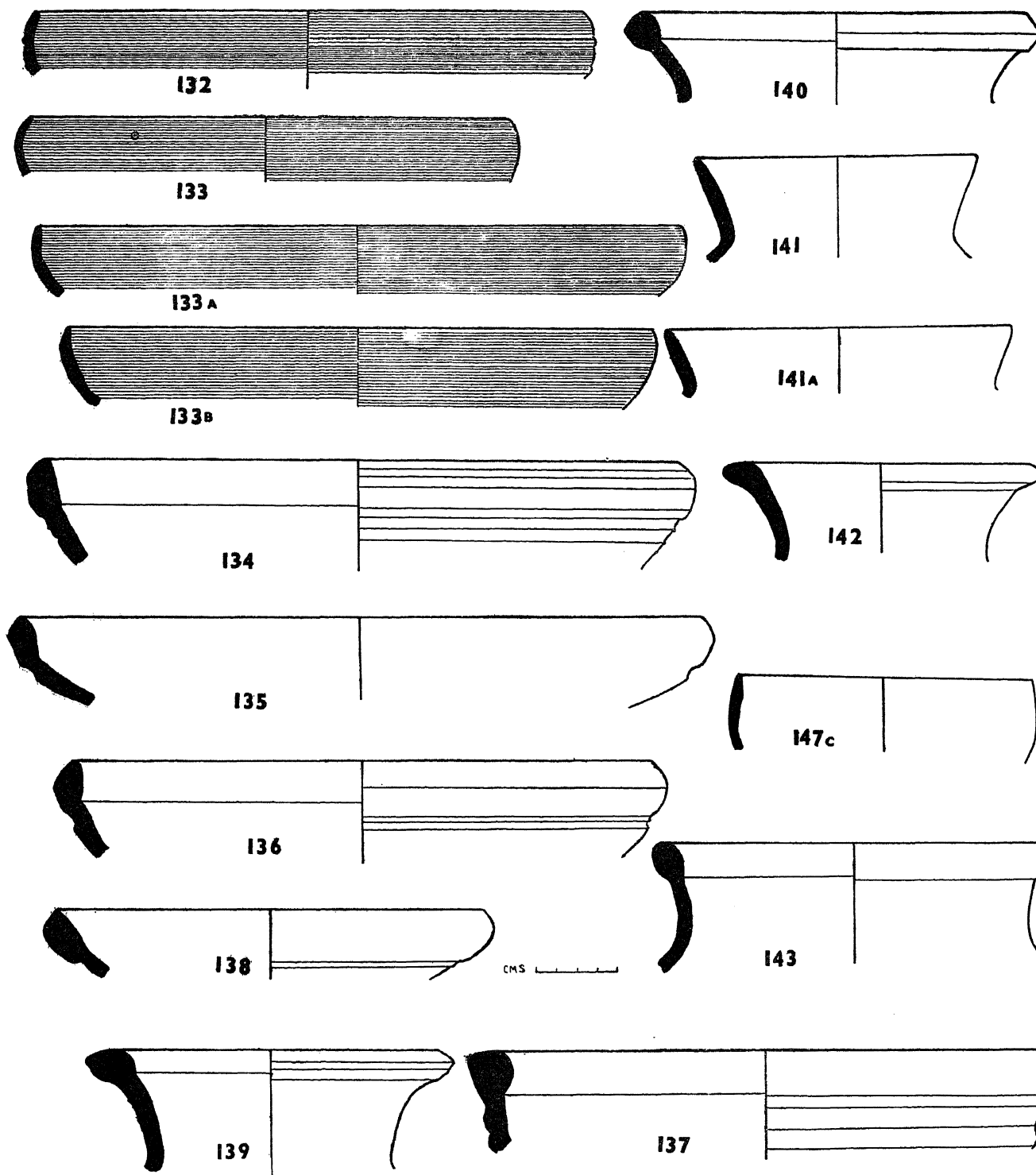


Fig. 21
Pottery : Types 132-143

THE POTTERY

Type 133 is a very highly burnished black-and-red-ware rim fragment, with incurved sides. Attempted perforation in the interior. B3 Layer (13).

Type 133A is similar to Type 133 above with a pale burnished slip. B3 Layer (14).

Type 133B is a similar fragment with a highly polished smooth slip and incurved sides.

Types 134-137 represent fragments of large red-ware vessels comprising of pans and roughly similar to Types 110-112B but differing in the basal shapes. Their fabric is the common red pottery with a bright red slip generally extending to the exterior of the vessels.

Type 134 is a club-shaped rim of a red-ware vessel with grooves on the exterior. Trench B3, Layer (8). Mauryan.

Type 135 is similar to Type 134 above but with a sharp angle at the inner side. Pale reddish slip on the exterior. B3 Layer (14). Megalithic.

Type 136 is a crude brick-like pottery fragment representing the rim of a large vessel having deep groovings on the exterior. B3 Layer (14).

Type 137 is a rim fragment of a large vessel with an incurved rim and a thick groove on the exterior. Crudely fired. B3 Layer (11).

Types 138-143 represent the necks of various forms of vessels from the excavation. Their fabric is generally a crudely fired red-ware resembling brick without any slip.

Type 138 is a black-ware fragment of a rim of a *Ghara* with flaring sides. B3 Layer (13).

Type 139 is a neck of a red-ware vessel with club-shaped rim and high tapering walls. Pale clay with large amount of chopped straw, reddish slip on the exterior. B3 Layer (14).

Type 140 is a neck of a similar vessel with a red slip in the interior and a pale chocolate or drab slip on the exterior. B3 Layer (15). Megalithic.

Type 141 is a funnel-shaped rim with a sharply pointed tapering rim. Crude red-ware with a dark red slip. Gritty clay containing mica, occasionally with large grits. B3 Layer (15). Megalithic.

Type 141A is a similar rim treated with a chocolate and black slip on the exterior and interior, respectively. B3 Layer (14).

Type 142 is a flaring rim of high-necked vessel with chocolate and black slip as in Type 141A. B3 Layer (15). Megalithic.

Type 143 is a rim of a red-ware vessel with a club-shaped rim and a high neck. Treated with a dark red slip all over. B3 Layer (9).

Fig. 22 : Types 144-149

Types 144-149 represent a superior class of pottery comprising of large sized dishes and bowls and distinguished by a smooth finish. The pottery burns pale-yellow or insipient red in colour, very hard baked and having a metallic ring. It occurs in an extremely meagre quantity and is generally confined to the middle phases between the Megalithic and the Mauryan occupation of the site. The vessels occasionally show marks of burning indicating that they were occasionally subjected to heat. The forms generally follow the megalithic pattern in respect of the shapes and fineness and are here treated as a special type of pottery on account of their excellent finish.

Type 144 is a large dish with thin walls and a sagger base. B3 Layer (10).

Type 144A is a fragment of an identical dish with a creamy slip on the exterior and fire-marks in the interior. B3 Layer (10).

Type 144B is another fragment without the characteristic smooth slip. Fire-marks on the exterior. B3 Layer (13).

Type 145 is a fragment of a dish with a slightly everted rim. Treated with a highly burnished slip in the interior. B3 Layer (13).

Type 146 is a incurved rim of a similar vessel, probably a bowl. B3 Layer (14).

Type 147 is a pale yellow slipped fragment of a vertical rim of a dish or a bowl. B3 Layer (9).

Type 147A is a similar fragment of a rim with a sharp pointed edge and curvilinear sides. Pale yellow slip all over. B3 Layer (13).

Type 147B is an identical sherd showing a highly pointed rim with a smooth grossy slip and marks of burning. B3 Layer (14).

Type 147C is similar fragment as Type 147 with many fire-marks. Treated with a pale creamy slip. B3 Layer (13).

Type 148 is a fragment of a rim with a pointed edge and a slight shallow grooving on the exterior. Pale creamy slip with fire-marks on the exterior. B3 Layer (14).

Type 149 is an extremely rare fragment of a rim probably belonging to a bowl with a very highly polished pale creamy slip all over. B3 Layer (14).

Fig. 23 : Types 150-156

The following types recovered from Layer (20), mainly from the black-and-red-ware belong to Period I. These are characterised by a dull sooted slip on the exterior which is well burnished.

Type 150 is the rim of a large vessel beaded on the exterior and sloping sides below. The slip is well burnished on the exterior only. Trench C, Layer (20).

Type 151 is characterised by a wide flaring rim, beaded and bears no slip.

Type 152 is a rim of a red-ware vessel of the same period. Dull clayey slip on the exterior. Trench C, Layer (20).

Type 153 is a black-ware of Period I, having a beaded rim on the exterior, very smoothly burnished. Trench C, Layer (20).

Type 154 is similar to Type 153 above, highly burnished; from the same stratum.

Type 155 is a vertical rim of cup-like vessel, treated with a heavy soot slip and highly burnished all over. Trench C, Layer (20).

Type 156 is a vertical rim of cup with tall sides and tapering body. Black-ware with a dull slip all over. Period I, Trench C, Layer (20).

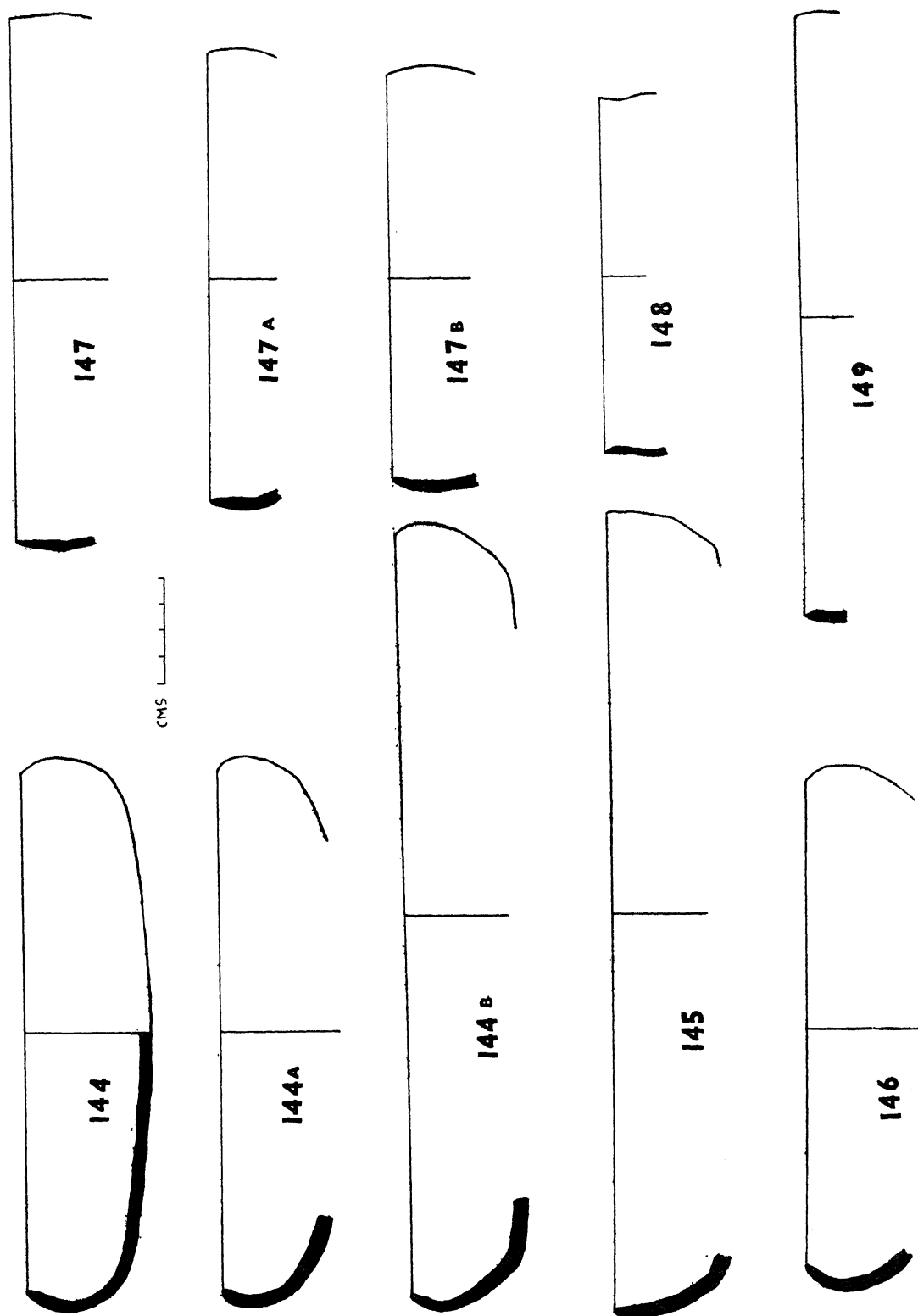


Fig. 22

Pottery Dishes : Types 144-149

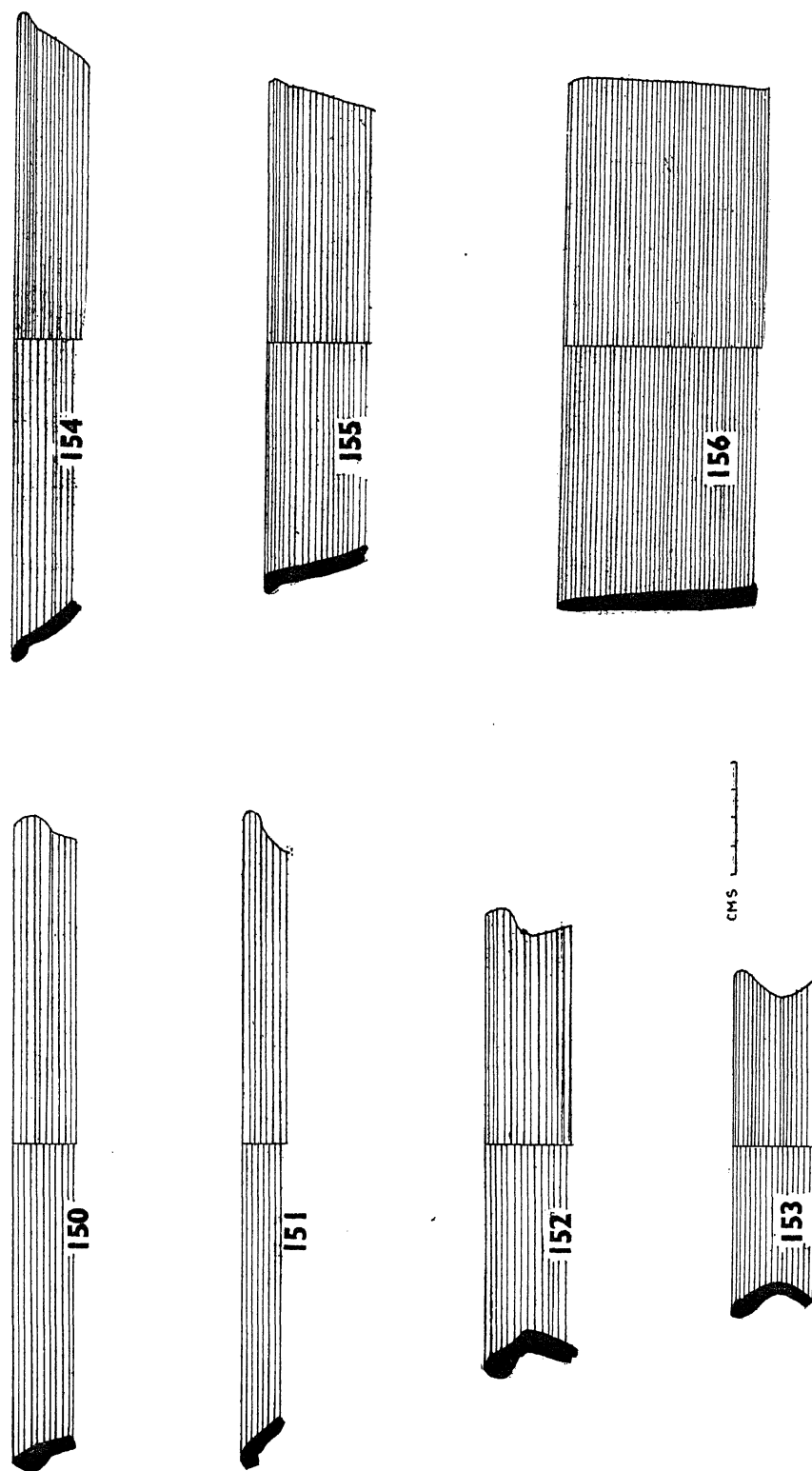


Fig. 23
Pottery : Types 150-156

THE POTTERY

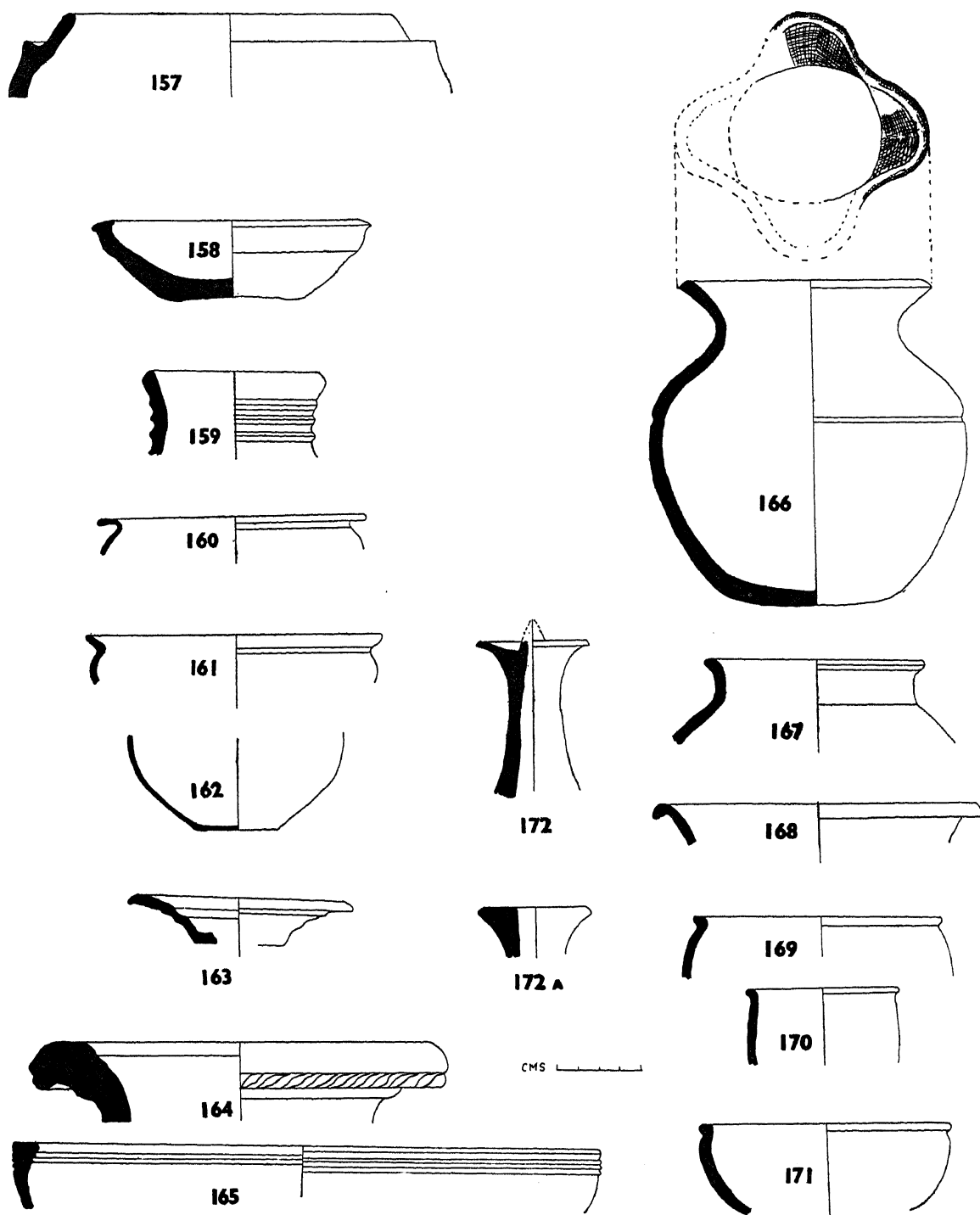


Fig. 24
Pottery of the Satavahana Period : Types 157-172A

Fig. 24 : Types 157-172A

Fig. 24 represents different types of vessels found in the excavation and belong to layers (3-5) assigned to the Satavahana Period. It shows mostly such types as were recovered in the second season's work at Kaundinyapura, which were not covered earlier. They help us to supplement the data for the Satavahana and Post-Satavahana Periods.

Type 157 represents the oblique rim of a red-ware vessel, having prominent grooving below the rim. The pottery is very light, porous and contains an amount of mica which is restricted to the slip on the exterior, the core being dark grey. The type is comparatively rare and only a few sherds are known. Trench C, Layer (3), Post-Satavahana.

Type 158 is a crude jar-cover with a beaked rim and a flattish base. Red-ware resembling brick without any slip. Trench D4, Layer (3).

Type 159 is a rim of a red-ware vessel characterised by a neck of groovings and a slanting cut rim. Dull red pottery with a bright red slip on the exterior. Trench C, Layer (3), Post-Satavahana.

Type 160 is an extremely well made thin neck of a delicately made vessel. Its fabric resembles the well-known Red Polished Ware of the Andhra-Satavahana Period. The slip has disintegrated considerably (Plate XXVIII, 2). Trench C, Layer (5), Satavahana.

Type 161 is another fragment belonging to the same Type 160 above and was associated with the same stratum. Trench A, Layer (4).

Type 162 is the basal portion of globular vessel marked by a number of groovings on the body. Red Polished Ware, similar to Types 160-161 above. Trench A, Layer (4), Satavahana.

Type 163 is a red-ware lid of a vessel characterised by a flattish base with a focussed grooving. Dull pottery with reddish slip on the exterior. Trench C, Layer (4), Satavahana.

Type 164 is thick rim of a vessel characterised by a twisted cable design, rarely to be found at Kaundinyapura. Dull red pottery with a dark red slip all over. Trench C, Layer (4), Satavahana.

Type 165 is a rim of a *de luxe* pottery with a very well levigated clay. It resembles very closely the Samian ware but lacks the glossy finish characteristic of that ware. The exterior is created with a bright red slip and the interior and a portion of rim has a greyish black slip smoothened all over. It has a metallic ring. The sherd is illustrated on Plate XXVIII, 3. The ware is probably non-indigenous.

Type 166 is a flat-based Chambu with a bulbous body and a curvilinear rim which has been pinched into a quatre-foil by hand-modelling. The clay is very porous, containing an amount of lime and rice husks, resembles brick and is treated with a red disintegrating slip all over. Trench B, Layer (5), Satavahana.

An exactly identical vessel has been recovered from the excavations at Nevasa,¹ assigned to Period V (50 B.C.-200 A.D.). The Kaundinyapura specimen is slightly earlier in date than the Nevasa example. Similar vessels also occur at Paithan and Ter in the Satavahana levels.

Type 167 is the neck of a similar ware as Type 166 characterised by a high neck and slightly curved rim and a bulbous body. Ware identical as Type 166 above. Trench C, Layer (5), Satavahana.

¹ Sankalia, *From History to Pre-History at Nevasa*, p. 293 : Fig. 133, Type T 81C.

THE POTTERY

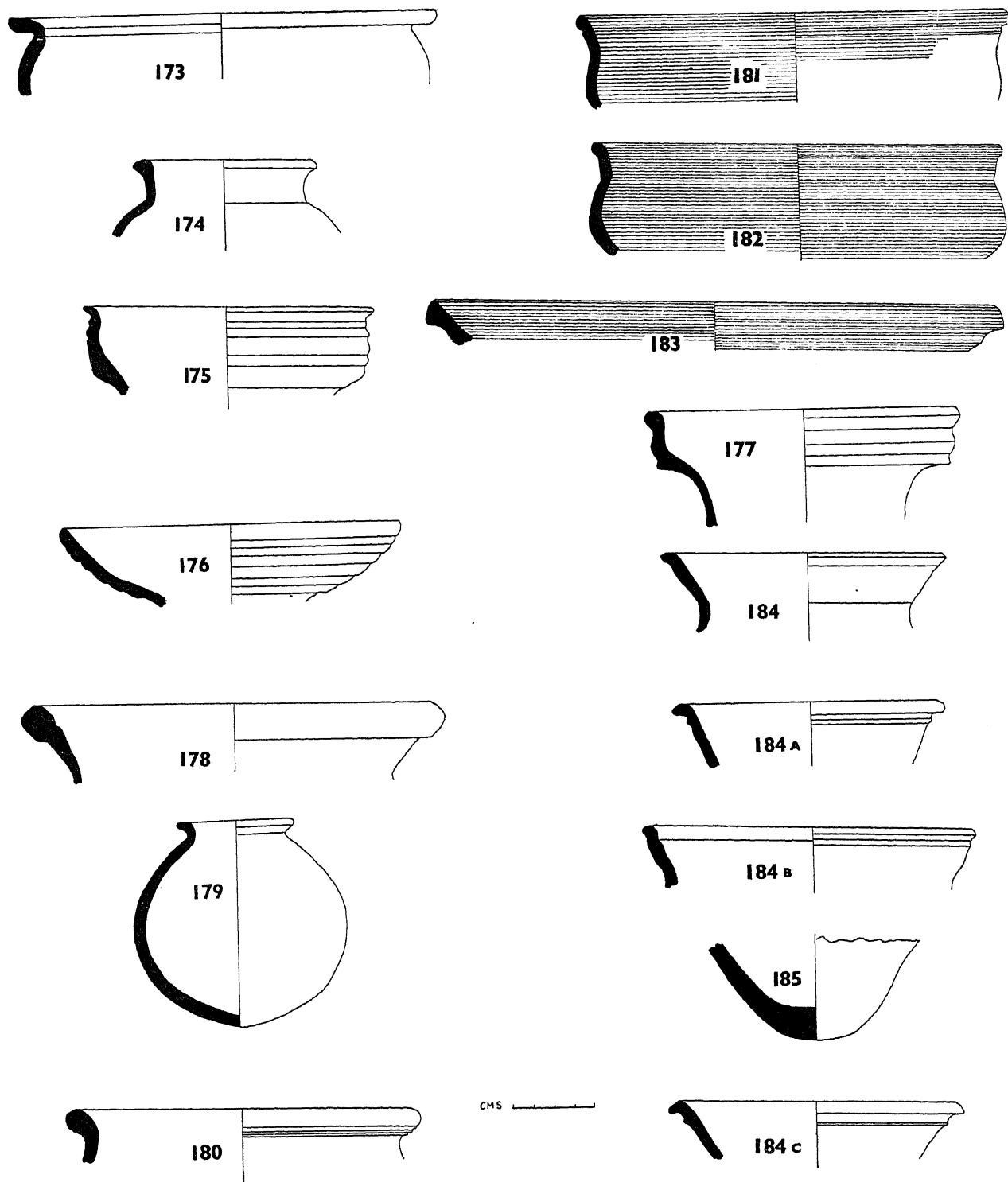


Fig. 25
Pottery : Types 173-185

Type 168 is the rim of a thin funnel-shaped wide mouthed vessel. Red-ware with a reddish slip on the exterior. Trench C, Layer (5), Satavahana.

Type 169 is a portion of a neckless vessel with out-turned rim. Coarse red pottery with a dark red slip on the exterior and up to the waist in the interior. Trench C, Layer (5), Satavahana.

Type 170 is a rimless cup without out-turned rim. The clay is porous containing an amount of sand and is treated with a micaceous slip on the exterior. Extremely well fired. Trench E, Layer (5), Satavahana.

Type 171 is a fragment of a red-ware bowl with a bulbous body and a short everted rim. Red-ware with a reddish-black slip all over. Trench C, Layer (5), Satavahana.

Type 172 is a well-known sprinkler of red-polished ware which is commonly associated with Andhra-Satavahana and Kshatrapa Periods in the Deccan and North Gujarat-Saurashtra respectively. The nozzle is tapering and slightly broken and only the neck portion of the vessel is preserved (Plate XXVIII, 1). Trench C, Layer (2).¹

Type 172A is similar to Type 172 above and is characterised by a flat top for the neck. Trench E, Layer (4), Satavahana.

Fig. 25 : Types 173-185

Type 173 is the rim of a large bowl with a flaring rim. Its fabric is a coarse reddish clay with a deep chocolate slip containing minute particles of mica. Trench C, Layer (6), Mauryan.

Type 174 is the neck of globular vessel with a beaked rim. Its fabric is a well levigated light clay treated with a dark red paint on the exterior and some portion up to the neck in the interior. Trench B, Layer (6), Mauryan.

Type 175 is the neck of a red-ware vessel characterised by a number of corrugations on the exterior, and out-turned rim. The fabric is a coarse red-ware treated with a dull red slip on the exterior. Trench C, Layer (6), Mauryan.

Type 176 is a basin-like rim of a red-ware vessel identical in fabric as above Type 175. Dull red slip on the exterior. Trench Z, Layer (7), Mauryan.

Type 178 is a rim of large vessel with flaring sides. Its fabric is a coarse yellowish grey clay with a disintegrating buff slip, rarely found in Kaundinyapura. Trench Z, Layer (7), Mauryan.

Type 179 is a complete red-ware vessel with a bulbous globular body and a small out-turned rim. The fabric is very coarse blackish clay with a dark red slip on the exterior. It was found about 36 cms. below the stone wall of the Mauryan Period (Pl. XV, B) and was sealed by a dark reddish sandstone stopper (See Pl. XXXIII, A). Though sealed at the time of the discovery the pot contained nothing except some smooth clay which must have slipped through the crevices between the mouth and the stopper. In present days such containers with stone stoppers are generally used for keeping oil in Maharashtra.

Type 180 is a rim of a thick vessel, with a dull greyish slip all over. Trench Z, Layer (8), Mauryan.

¹ Cf. Subba Rao, *Baroda through the Ages*, p. 58, Fig. 24, Nos. 1, 7, 8, 11 & 12.

Sankalia and others, *Nevasa Report*, Fig. 142 : 1-5.

Sankalia-Dikshit, *Excavations at Brahmapuri, Kolhapur*, Fig. 22 : 1-4.

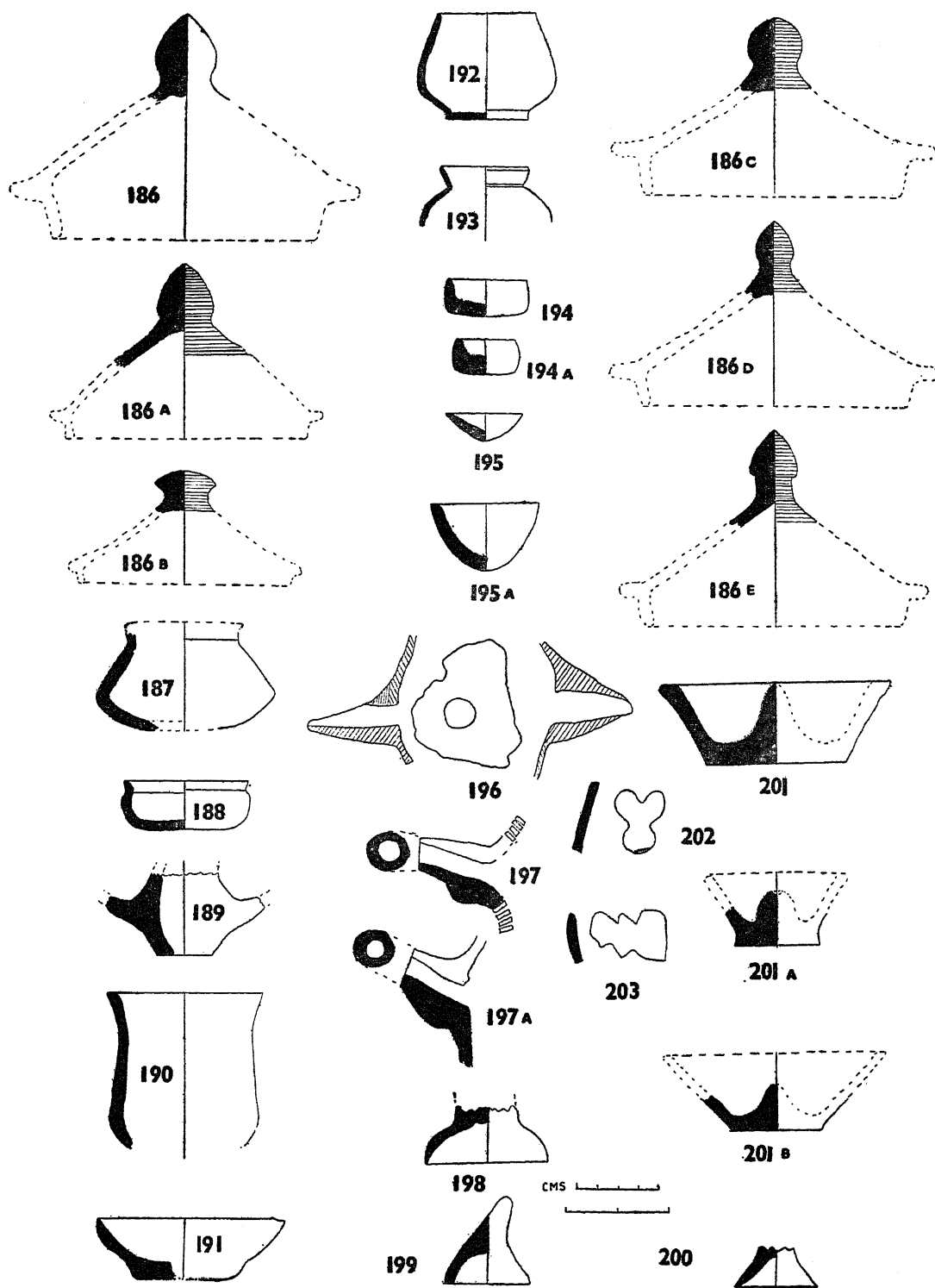


Fig. 26
Pottery : Types 186-203

Type 181 is a fragment of a red-and-black-ware vessel with a dull slip in the interior while the exterior is treated with a bright burnished black slip. Trench Z, Layer (8), Mauryan.

Type 182 is a rim of a vessel similar to Type 181. Trench Z, Layer (8).

Type 183 is a rim of a black-ware vessel. Trench Z, Layer (8), Mauryan.

Type 184 is a neck portion of a black-ware vessel having a dull black slip in the interior and a clayee wash on the exterior. Trench C, Layer (10), Pre-Mauryan.

Type 184A is similar to above Type 184, from Trench C, Layer (11), Pre-Mauryan.

Type 184B is a rim of a red-ware vessel characterised by an out-turned beaked rim and a slightly curved body. Treated with a dull reddish slip all over. Trench C, Layer (11), Pre-Mauryan.

Type 184C is a dull black vessel similar to Types 184, 184A above. Trench C, Layer (11), Pre-Mauryan.

Type 185 is the basal portion of round-based pot, hand-made and finished by beating all over. Crude dull black pottery with fire-marks. Trench C, Layer (8).

MISCELLANEOUS POTTERY

Fig. 26 : Types 186-203

Fig. 26 represents miscellaneous pottery found in the second season's work. It consists mostly of lids, spouts, jar-covers and bases of vessels not noticed earlier.

Type 186 and its variants characterise a typical jar-cover found in large quantities and mostly associated with Layers 4-6 and assigned to the Mauryan and Satavahana Periods. It is in Layers 6-5 that they are found in large numbers, and a few examples from the Satavahana layers may be strays.

The parent Type 186 is represented by a bud-shaped pointed knob, solidly built, and affixed to the pan below which is conjecturally restored in the drawing. The illustrated specimen comes from Trench B, Layer (4) and belongs to the Satavahana Period. Its fabric is a coarse reddish clay treated with a similar slip.

Variet 186A is characterised shallow groovings at the base of the knob and on the tapering portion of the cover. The pottery is dark black with a soot slip on the exterior. Trench C, Layer (6), Mauryan.

Variet 186B is another cover having a flattish curvilinear top. The fabric is very coarse, ill burnt clay with a dull slip on the exterior. Trench Z, Layer (7), Mauryan.

Variet 186C is similar to 186 or 186A in having a pointed bud-shaped top not much pronounced. The fabric is coarse black clay with deep black burnished slip outside. Trench B, Layer (6), Mauryan.

Variet 186D is somewhat slender in appearance than the parent type, similar to Type 186C. Trench C, Layer (8), Mauryan.

Variet 186E, emanating from Trench D4, Layer (10), is distinguished by a dull clay without any slip; Pre-Mauryan.

Type 187 is a small red-ware vessel with a carinated body and a flattish base. Its fabric is a coarse clay with large grits and is treated with a reddish slip on the exterior. Trench C, Layer (3), Post-Satavahana.

THE POTTERY

Type 188 is a small wheel-made jar-cover of black clay which bears no slip. Crudely made. Trench E, Layer (3), Post-Satavahana.

Type 189 is a fragment of a jar-cover whose exact shape is not known. The extant fragment shows a wheel-like body with flaring sides for the pan. Dull yellowish clay with clayee slip on the exterior. Trench C, Layer (3), Post-Satavahana.

Type 190 is the fragment of a cup with high walls and vertical rim. Its fabric is a coarse red clay with red wash on the exterior and is a rare shape for vessels in Kaundinyapura. Trench D4, Layer (6), Mauryan.

Type 191 is a fragment of a lamp having a flat base and a pinched rim for the wick. Dull chocolate clay with a clayee wash. Trench B, Layer (5), Satavahana.

Type 192 is a miniature cup with very thin walls and flat pedestal base with focussed groovings. Its fabric is a red clay with a clayee wash all over. Trench C, Layer (5), Satavahana.

Type 193 is the fragment of the neck of a dull chocolate miniature vessel ; Very well levigated clay, treated with a dull chocolate slip on the exterior. Trench C, Layer (4), Satavahana.

Type 194 is a hand-made vessel, small in size and apparently for use as plaything for the children. Dull chocolate ware with a clayee wash. Trench D4, Layer (3), Post-Satavahana.

Type 194A is yet another vessel of the same type as above. From Trench C, Layer (5), Satavahana.

Type 195 is a miniature hand-made lid of coarse gritty clay with a clayee wash as above. Trench C, Layer (5), Satavahana.

Type 195A is yet another hand-made bowl with a pointed base. Fabric same as above Type 194. Trench C, Layer (9), Pre-Mauryan.

Type 196 is a very rare type of spout, of which only one example has been recovered at Kaundinyapura. In shape it resembles the lower portion of the beak of a bird, having a slanting cut and the spout projects in a tapering sharp pointed end. The fabric is a yellowish red gritty clay with a smooth mica-treated slip all over. Trench C, Layer (3), Post-Satavahana.

Type 197 represents the common type of a spout found in great profusion in Satavahana layers and is characterised by a large lump of clay at its base. The latter is probably the remnant of the testacle type of spouts which are commonly found in Buddhist monasteries in India. The fabric of the spout illustrated is a dull chocolate brown pottery with a dark red slip on the exterior. Trench A, Layer (2), Post-Satavahana. In variant 197A, the lower portion is sharply defined. Trench B, Layer (3), Post-Satavahana.

Type 198 is the basal portion of a red-ware vessel, shaped like a miniature cup of rare occurrence at Kaundinyapura. Bears highly polished slip on the exterior. Trench B, Layer (5), Satavahana.

Type 199 is a rare jar-cover with a conical top. The upper portion of it is not well defined and if inverted this object may well represent a miniature saucer-shaped lamp attached to the rim of a votive tank, described elsewhere (*see* p. 108) and of which two fragments have been recovered in the excavation (Pl. XXXVIII, 1-2). Trench C, Layer (3).

Type 200 is another jar-cover similar to Type 199 above ; or it may perhaps represent a lamp attached to a votive tank. Trench B, Layer (4), Post-Satavahana.

Type 201 and its variants represent another type of jar-cover which is characterised by a flattish base and flaring sides for the cup which have a protuberance for lifting. The type occurs mostly in the Mauryan layers and does not survive into the later period at the site.

Type 201 is represented by a nearly complete specimen which came from Trench B, Layer (5) and has a coarse gritty fabric with a dull brownish slip. It is assigned to the Mauryan Period.

Variant 201A is from Trench B, Layer (5) and has a small depression in the centre of the holder in the centre of the bowl.

Variant 201B is from Trench B, Layer (5) and is assigned to the Mauryan Period. The bases of these covers have marks of focussed groovings, being separated from the wheel by means of a thread.

Type 202 is a rare sherd of black-and-red vessel, cut from the basal portion and is shaped like a Nandipada (Pl. XXVIII, C.2).

Type 203 is yet another sherd of red-polished ware whose edges have been serrated by a sharp instrument to form a zigzag line (Pl. XXVIII, C.1).

PAINTED POTTERY

(Frontispiece)

The Painted Pottery from Kaundinyapura came exclusively from Layer (6) which lay in between the Mauryan Layer (8) and the Late Satavahana Layers (4-5) about $7\frac{1}{2}$ ft. below the surface of the mound. The pottery consists of a total yield of 21 sherds of which 8 were neck fragments while the remaining 13 sherds were comprised of the globular bodies. No complete vessel was discovered but from the shape encountered it can be postulated that they originally belonged to large sized *Ghara*-shaped vessels with high necks and having rounded rims with a prominent ledge in the interior and having gourd-shaped, elongated or spherical bodies. The fabric of the pottery is a very well levigated clay with medium grits, treated with a dark salmon-red slip on the exterior and up to the neck in the interior of the vessels. Nearly all the sherds show that the interior was treated with a micaceous slip over a pale chocolate body in small particles of mica. The vessels are extremely hard baked and have a metallic ring. The painting consisted chiefly of broad bands on the globular body, on the neck and on the edge in the interior of the rim. The paint is pale or dark chocolate insipient through red and was applied very lightly probably while the pot was on the wheel as the striations seem to indicate. The bands are approximately 3 to 4 centimetres in thickness in the case of the broad ones while the shorter ones measure nearly $\frac{1}{4}$ - $\frac{1}{2}$ cm. The broader ones seem to have been painted by drawing smaller bands first and then by changing them to broader dimensions. This feature is clearly noticed when the surface is moistened with water which reveal the traces of the smaller bands beneath.

While painted black-on-red pottery is generally associated with Chalcolithic layers in the Deccan and other allied sites in India, it appears that the painted pottery from Kaundinyapura does not belong to that class. It is almost exclusively absent from the lower strata from the excavations which have revealed clear traces of megalithic pottery (Layers 11-15) with a sterile Layer (12) in between and cannot therefore be said to have any bearing on Chalcolithic Cultures in the region. The site

of Kaundinyapura has yielded several unstratified sherds of the characteristic black-on-red painted pottery which has striking affinities with Chalcolithic pottery of known context in India. It bears a close resemblance to the pottery from the Chalcolithic layers at Tripuri, Nasik and Jorwe, and though not encountered in the present excavations it is surmised that it may be present in a Chalcolithic stratum not far from the site. The present excavations were on too small scale.

Painted pottery of a date later than the Chalcolithic has been recorded on several other sites in India. The painted wares at Rangmahal¹ belonging to the Kushan epoch are a clear instance to show that painting on pottery was not an exclusive feature of the Chalcolithic people only. Unpublished evidence from the excavations at Devnimori near Baroda also points to the conclusion that it was in vogue in a Kshatrapa domination of Saurashtra and Gujarat. There should be no compunction therefore if the painted pottery at Kaundinyapura is hailed as a late comer on the field and that it is devoid of any Chalcolithic connections. On the present showing the stratigraphic considerations indicate that it should be assigned to a post-Mauryan Period, probably co-eval with the Satavahana dominance over Vidarbha, or perhaps a little later than *circa* 200-400 A.D. in view of the emergent Muslim layers.

Other painted wares.—Besides black-and-red painted wares discussed above the site of Kaundinyapura has yielded two large sherds of globular pots which are painted with a different technique. These sherds were encountered in Layers (5) and (8) in the Trench B3. Their fabric is a very light yellowish pottery, very indifferently fired and has a dull yellowish wash or slip on the exterior only. The painting consists of broad bands effected by a blob or a piece of cotton swab, about $3\frac{1}{2}$ cms. in thickness and making a V shaped pattern or outstretched wings (Plate XVIII, B). The superimposition indicates that the painting started from right to left while making the sweeping curves. The number of sherds being very small it is not easy to postulate about the exact shape of these wares. But it would appear to be co-eval with N. B. P. yielding layers *circa* 300 B.C. and were being produced in subsequent periods at least till the Late Satavahana Period (Plate XVIII, A).

Russet-coated Andhra ware.—Only one sherd of this ware, first recognised at Chandravalli and Amaravati² was found. It consists of a rim (?) and the lower portion of a dish having a sharp carination at the base but no complete shape could be made out (Plate XXVIII, B). The upper portion, probably forming the rim was treated with yellow parallel bands on a russet ground and the lower portion below the carination consists of a thick black paint. The interior also has the same black slip probably resulting from the inverted firing treatment or in the form of a very thick wash. Linear patterns are quite common in the Chandravalli 'Andhra' pottery³ where it is referable to *circa* 1st-2nd century A.D.⁴ This sherd does not represent the normal forms of the ware from the South Indian sites where it occurs in great profusion. The date of this sherd coincides with another datable object from the same Layer (7) which is a small terracotta seal (No. 2-31) described elsewhere in this report (p. 134). It has a one-line legend in characters of about 1st-2nd century A.D. and the date of the layer is consistent with the evidence from the South. It may here be emphasised that the zone for the distribution of this ware is limited and the present sherd is the only one to be found outside it.

¹ Hanna Rydh, *Rangmahal*, pp. 22, 24-40.

² *Ancient India*, No. 2, p. 48, Fig. 13.

³ *Ancient India*, No. 4, pp. 277-80 and Pls. CXXIII-CXXV ; Fig. 45.

⁴ *Ancient India*, No. 9, pp. 121 & 166 and *Ancient India*, No. 4, pp. 271-73.

GRAFFITI ON POTTERY¹

GRAFFITI on the pottery from Kaundinyapura is restricted to the lower levels (Layers 11-15) though occasionally a few strays have been recorded in the Mauryan and Late Satavahana levels also. The decoration is mainly a megalithic one. In most of the cases it was recorded on the exterior of vessels like bowls and dishes of black-and-red ware and only sparingly on red-ware vessels. In the case of the latter the motif occurs on the necks of vessels whereas in the black-and-red ware it is resorted to on the rims, basal portion of the carinated walls and in rare cases on the bases of the dishes. Only in one instance it was found that the interior of dish was embellished with a compartmental lines in the shape of a cross (Fig. 4). The designs are in the form of light scratches made with a very sharply pointed instrument or perhaps with a needle.

Only a few amongst them can be identified as the crescent (Fig. 27 : 2) [Plate XXI, 2] ; the cross (Fig. 27 : 7, 8, 24, 32), (Fig. 28 : 7, 8) [Plate XXI, 7, 8] ; (Fig. 29 : 32) ; the ladder (Fig. 27 : 3), (Fig. 28 : 3) ; the fish (Fig. 27 : 12), (Fig. 28 : 12) [Plate XXI, 12] [Plate XXII, 49] ; a bullock-cart like object (Fig. 28 : 4) [Plate XX] ; the banner (Fig. 27 : 31), (Fig. 29 : 31) [Plate XXI, 31] ; the rising sun (Fig. 27 : 33), (Fig. 29 : 33), [Plate XXI, 33] ; the bow and arrow (Fig. 27 : 14, 18, 30, 34), (Fig. 29 : 19, 30), (Fig. 20 : 36 ?) [Plate XXI, 19, 30] ; and the arrow-head (Fig. 27 : 13, 15, 17, 27, 35, 39), (Fig. 28 : 9, 13, 15, 16, 17), (Fig. 29 : 22, 25, 27), (Fig. 30 : 35, 38, 39, 40, 41) [Plate XXI, 15, 22], [Plate XXII, 35, 36, 37, 38, 39, 40, 41]. In other cases the designs are made of straight and curvilinear lines. All these are illustrated in Fig. 27 : 1-55 ; Fig. 28 : 1-17 ; Fig. 29 : 18, 34 ; and Fig. 30 : 36-55 ; and in Plates XX-XXII.

As in other places the graffiti occurs incised into the slip of the vessels after they were fired and in no instance it could be said that the occurrence of the designs was accidental though the meaning of all or any one of them was uncertain. The designs were single units in every case except in one case where two units were combined on one and the same pot.

Graffiti on pottery, particularly of megalithic fabric is recorded on several sites in India such as Maski, Sanur, Sengmedu, Brahmagiri, Kunnatur and T. Narsipur. It is encountered with grave-goods at Sanur, Kunnatur, Bahal and T. Narsipur and generally with black-and-red ware vessels. The only occupational sites at present known to have yielded any graffiti are Bahal, Maski and T. Narsipur and to this list Kaundinyapura may be added now.

The subject of different marks represented by graffiti on megalithic pottery has been very exhaustively studied by Shri B. K. Thapar in his report on the Maski excavations ; and this has shown that the marks by themselves do not carry any suggestion of being owners' marks. The number of marks present on the Kaundinyapura pottery lead us to the same conclusion.

Dr. G. Yazdani, in his paper in the "Journal of the Hyderabad Archaeological Society, 1916-17" had given a comparative study of Graffiti marks but the Harappan and post-Harappan material was not available. Sir Mortimer Wheeler (Brahmagiri-1947, Harappa-1947), Shri B. K. Thapar (Maski-1954) and Dr. N. R. Banerjee (Sanur-1950-1952) in their reports on excavations at Harappa, Brahmagiri, Maski and Sanur respectively, have found graffiti on pottery at all these sites. Besides additional material has accumulated from other megalithic and Chalcolithic sites.

¹ This section on graffiti has been contributed by Shri M. R. Inamdar.

GRAFFITI ON POTTERY

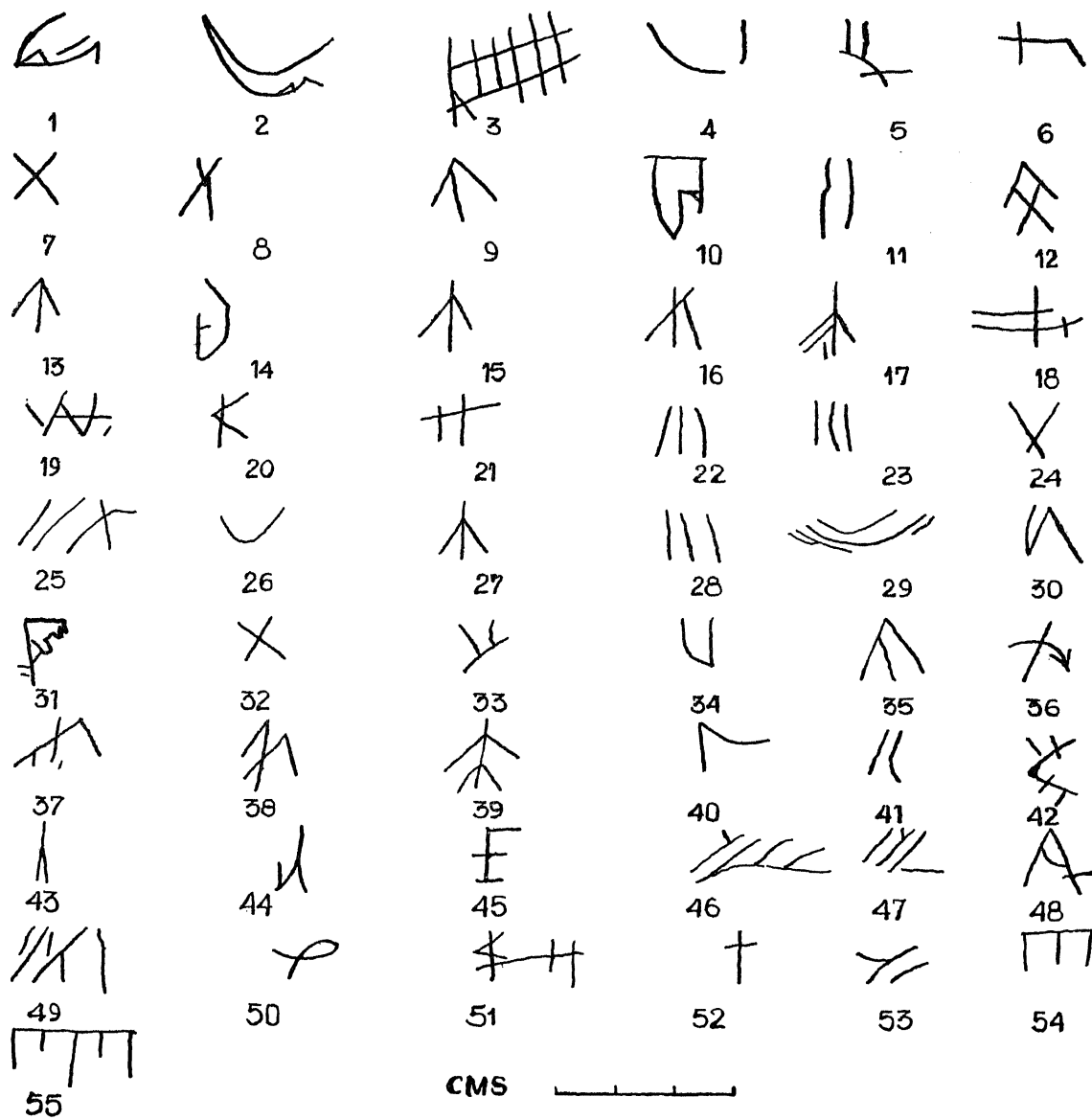


Fig. 27
Graffiti : Marks 1-55

Shri B. B. Lal has studied the available graffiti on megalithic pottery of South India and also traced how far back they could be pushed. It is found that in a total of sixty-one symbols as many as forty-seven marks were quite common to the megalithic pottery on the one hand and the Harappan and post-Harappan on the other. It is shown that nearly eighty-five per cent of Harappan-Chalcolithic symbols continue to the megalithic times.

Shri B. B. Lal has emphasized that graffiti on pottery cannot be calculated to represent merely potters' marks. Some of these symbols are found even on Harappan seals and in early Brahmi alphabets and on few punch-marked coins from Taxila.

Against this background it is possible to surmise they may have some sort of a phonetic value, but the present researches do not permit the study to be conclusive. We give below a chart showing the commonness of the graffiti with other sites in India.

A Chart showing the commonness of the Graffiti

Older punch-marked coins of Taxila	Kaundinyapura type	Lal	Other evidences
No. 28B Three disconnected parallel lines	23-28	34	Kalibangan — H. Navadatoli — Ch. Sanur — Meg. Brahmagiri — Meg.
No. 1 Simulating Brahmi " Ma " ..	50	30	T. Narsipur — Meg. Kalibangan — H.
No. 35 Sun	33	17	Kunnatur — Meg. Rangpur — Ch. Prakashe — Ch. Bahal — Ch.
No. 106 Cross	7	59	Rangpur — Ch.
No. 233 Simulating Brahmi " Ta " ..	43	2	Harappa — Seal Yazdani-5 — Meg.
No. 243 Simulating Brahmi " Ga " ..	40, 41, 38	1	Amri — H. Lothal — H.
No. 288 Bow and Arrow	30-34	32	Rangpur — Ch. Kalibangan — H. T. Narsipur — Meg. Harappa — Seal Mohenjodaro — Seal
No. 19A Two parallel loops ..	2	20	Sanur — Meg. Jadigenahalli — Meg.

H = Harappan; Ch = Chalcolithic; Meg = Megalithic.

GRAFFITI ON POTTERY

While all the individual signs are not related to each other, the only motifs which seem to have been repeated are the cross and the arrow-head marks. Three disconnected parallel lines occurring on the necks of vessels are not considered here as the complete forms of necks have not been encountered and it cannot be ascertained if the motif as a whole was resorted to on other portions as well. The only mark which seems to have been repeated on other sites in India is the arrow-head mark, which occurs on no less than eleven sherds, and the cross represented on eight examples. The following few comparisons are made here to show that a few marks are similar to those found on other megalithic sites in India:

Ladder mark (No. 3)	..	..	Similar to Brahmagiri megalithic pottery, Type C 13A (Fig. 31, No. 1).
Simple cross (No. 4)	..	..	Rough cross on Cist pottery from Brahmagiri, Types C1, C1a, 317.
Arrow mark (Nos. 8, 9, 13, 15, 16, 17, 22, 24, 25, 27, 32).			Rough arrow-mark on megalithic pottery in habitation levels, Figs. 31, 16. Very common at Sanur, <i>A. I.</i> 15, Types 1, 3, 4, etc.
Bow and Arrow (Nos. 30, 34, 36)	..		Bow mark similar to Maski, Figs. 29, 4, 11.
Three disconnected parallel lines (Nos. 23, 28).			Roughly similar to Brahmagiri, Type 5 in Fig. 31. Sanur, Type 6, Fig. 8 (<i>A.I.</i> 15).

In most cases the pottery types represented by the comparable material from other sites do not tally with the material from Kaundinyapura. The table given above points to the semblances and no inference from their total identity is aimed at.

Fig. 28 : 1-17

1. Potsherd of black-and-red ware, probably portion of a bowl having pottery mark resembling a sickle. The graffiti is scratched after firing on the exterior of the vessel on the red portion. B3 Layer (4), Megalithic fabric. Probably a stray from the Late Satavahana levels from disturbed layers.

2. Portion of the flaring rim of a bowl with a sharply carinated body. The crescent-like mark appears on the exterior, incised after firing. The fabric of the vessel is not megalithic though the interior of the vessel is soot-slipped resulting from inverted firing technique. From disturbed layers in the Late Satavahana Period. B3 Layer (6).

3. Large fragment of a carinated dish of megalithic black-and-red fabric, with coarse grits, and marks of secondary firing on the base. The ladder-like graffiti appears on the base of dish almost touching the basal carination. B3 Layer (6). The mark is comparable to a megalithic dish Type C 13a from Brahmagiri (*A.I.*, No. 4, Fig. 10 ; Type 1 in Fig. 31) where it occupies a similar position.

4. Half portion of a dish of megalithic fabric, having a short slightly incurved rim and a sagger base. The interior of the dish is scratched with a cross which divides the dish into four compartments. The base bears the graffiti resembling a plough or a bingo. The slip on the vessel is considerably rubbed off. B3 Layer (6).

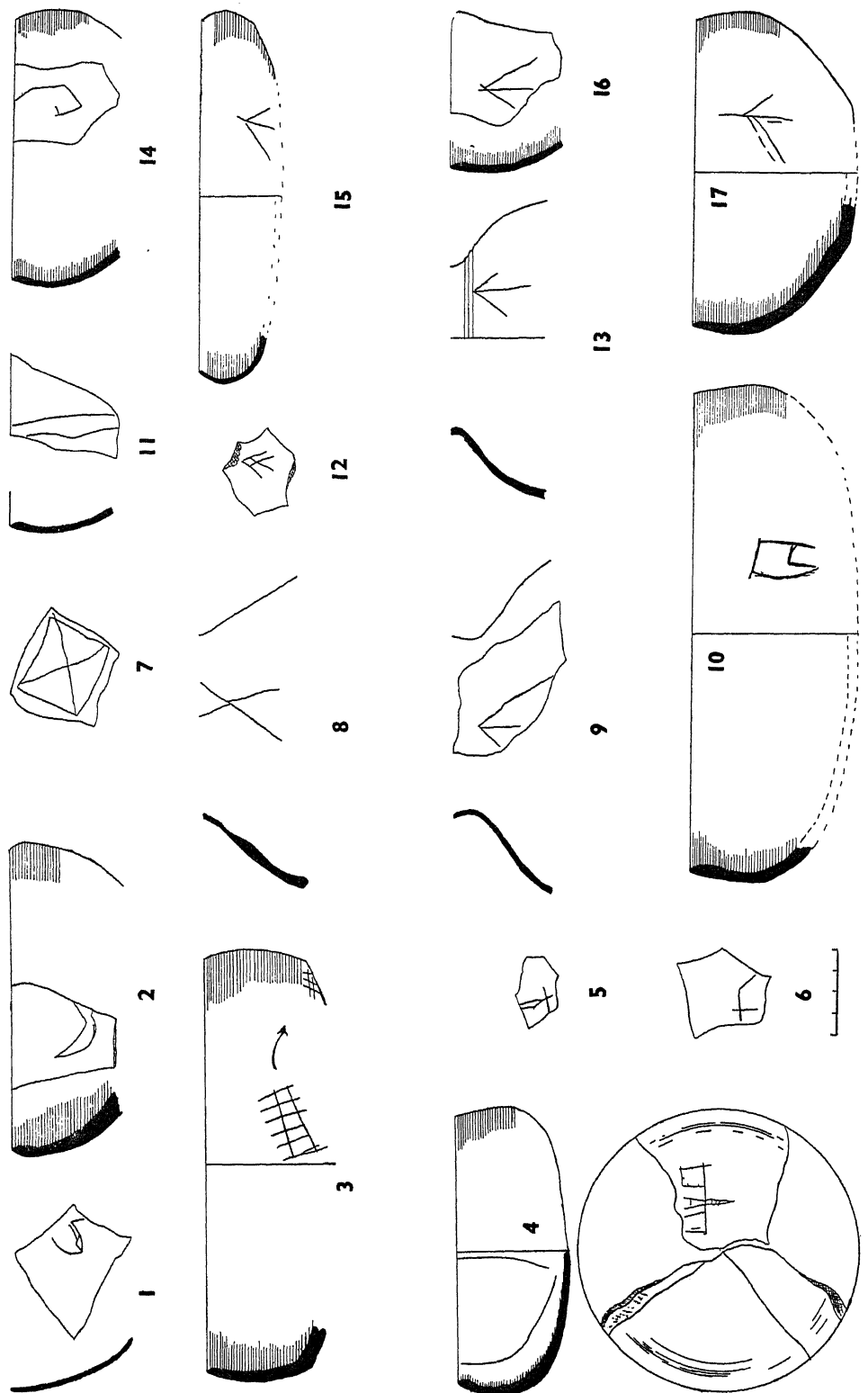


Fig. 28
Graffiti on Pottery : Figures 1-17

GRAFFITI ON POTTERY

5. Small potsherd of megalithic black-and-red ware (?) bearing a graffiti of two irregularly joined lines meeting another at right angles. The lines are scratched on the exterior of the vessel, probably a dish. B3 Layer (7).

6. Fragment of a dish of red-and-black ware with the inverted firing technique. The graffiti occurs on the basal portion and represents a vertical line crossed by another with a slight bent. B3 Layer (8).

7. Fragment of a red-ware vessel, with a dark reddish brown slip on the exterior. The graffiti consists of a cross in a rectangle, carved on the exterior. B3 Layer (8), Mauryan.

8. Fragment of the neck of a red-ware vessel, coarse and having a dark red slip on the exterior. The graffiti is an irregular cross which is known from megalithic pottery at Brahmagiri. B3 Layer (9), Pre-Mauryan.

9. Fragment of the neck of a red-ware vessel of a very coarse and gritty clay containing a large amount of mica. It is unslipped in the interior while the exterior has a pale dark red slip. The graffiti resembling an arrow-head on the exterior is fragmentarily preserved. B3 Layer (15). From Megalithic layers.

10. Fragment of a thick rim of a black-and-red ware dish with the inverted firing technique. The graffiti consists of very sharply incised thick lines appearing at the carination. D4 Layer (6) from unstratified deposits.

11. Fragment of a rim of a black-and-red ware dish or a bowl with inverted firing technique. The graffiti consists of two irregularly scratched vertical lines. B3 Layer (10), Megalithic.

12. Fragment of a red-ware vessel treated with a chocolate slip on the exterior, common in the lower layers. The graffiti is a fish incised in very deep lines in the interior. B3 Layer (15).

13. Similar pottery fragment representing the neck of a vessel with a globular body. The exterior of the vessel has marks of scoring all over and the graffiti is a simple arrow-mark on the exterior. B3 Layer (15). Megalithic.

14. Fragment of a rim of a black-and-red ware bowl of megalithic fabric bearing a very smooth even slip. The graffiti is a curved line on the rim portion. B3 Layer (15), Megalithic.

15. Rim portion of a shallow black-and-red ware dish with short rim and a sagger base. The interior is treated with a soapy slip very smoothly burnished and the graffiti consists of a simple arrow-mark near the basal carination on the exterior. Surface Collection.

16. Rim of a megalithic black-and-red ware bowl or dish with a simple arrow-mark on the exterior. B3 Layer (15), Megalithic.

17. Similar fragment of a bowl of megalithic black-and-red ware. The graffiti mark consists of a compounded arrow-mark. B3 Layer (13), Megalithic.

Fig. 29 : 18-34

18. Tiny fragment of megalithic black-and-red ware of indeterminate shape, consisting of a graffiti on the exterior comprising four lines in the shape of a double cross. B3 Layer (9).

19. Fragment of red-and-black ware with inverted firing technique. The graffiti consists of a double axe pattern roughly executed along with curved lines in the interior of the flat base. B3 Layer (9).

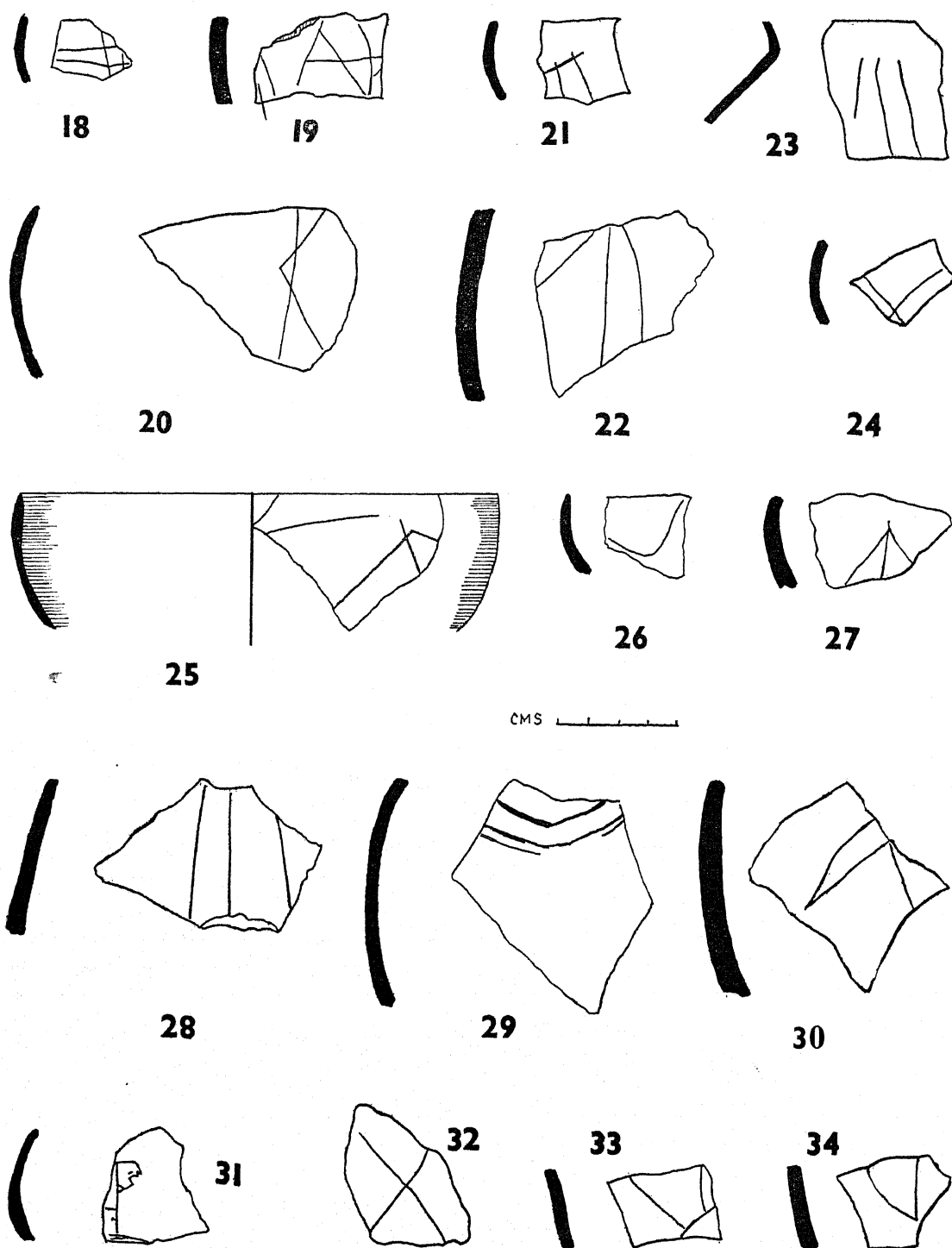


Fig. 29
Graffiti on Pottery : Figures 18-34

GRAFFITI ON POTTERY

20. Curved portion of the wall of a bowl of megalithic black-and-red ware. The interior is treated with a soapy slip as on No. 15 above. The graffiti resembles the English letter K on a crude form with the arms not coinciding with the vertical line. B3 Layer (10), Megalithic.

21. Rim of a bowl of megalithic black-and-red ware. Incised with a graffiti consisting of two lines joined irregularly with another. B3 Layer (15), Megalithic.

22. Thick fragment of the neck portion of a globular vessel, treated with a dark chocolate slip on the exterior. The interior is unslipped. The graffiti comprises of an arrow-mark, the tip of which is missing. For similar pottery cf. No. 8 above. B3 Layer (14), Megalithic.

23. Thin wall of a black-ware vessel with a highly burnished dark slip on the exterior. The graffiti consists of three vertical lines separated from each other at irregular intervals. Surface Collection.

24. Potsherd of black-and-red ware megalithic fabric with a partial representation of a cross (?). B3 Layer (14), Megalithic.

25. Rim of a black-and-red ware megalithic bowl having an irregular arrow-mark and an additional line on the exterior. B3 Layer (15).

26. Similar to above with a curved line as graffiti on the exterior. B3 Layer (15). Megalithic.

27. Similar with an arrow-mark on the exterior. B3 Layer (15), Megalithic.

28. Neck portion of a red-ware vessel with three parallel disconnected lines on the exterior. B3 Layer (8), Mauryan.

29. Similar to above, with a double curved line as the graffiti. D4 Layer (8), Mauryan.

30. Fragment of the basal portion of a black-and-red ware dish with inverted firing technique. The graffiti comprises of a bow and arrow mark on the exterior. Unstratified.

31. Fragment of a dish with very thin walls. Interior treated with a smooth shining black slip. The graffiti resembles a banner erected on a pole with attachments in the middle. B3 Layer (9). Possibly Mauryan.

32. Fragment of the base of a dish. Black ware. Treated with a smooth slip as on No. 31 above. Has a roughly scratched cross on the exterior. D4 Layer (9).

33. Potsherd of black-and-red ware fabric having a 'Sun' like figure on the exterior. Unstratified.

34. Fragment of a red-ware vessel with gritty fabric, with apple-red slip on the exterior. The incised graffiti probably represents the lower portion of a bowl (?). B3 Layer (15), Megalithic.

Besides these graffiti occurs on a megalithic black-and-red ware on a complete dish (Pl. XX: Type 120) where the design consists of an arrow-mark with along stem and an irregularly shaped circle. Both these appear at regular intervals indicating that the vessel was probably marked with two additional graffiti which are missing. This dish is the only one having more than one graffiti to be found at Kaundinyapura. It came

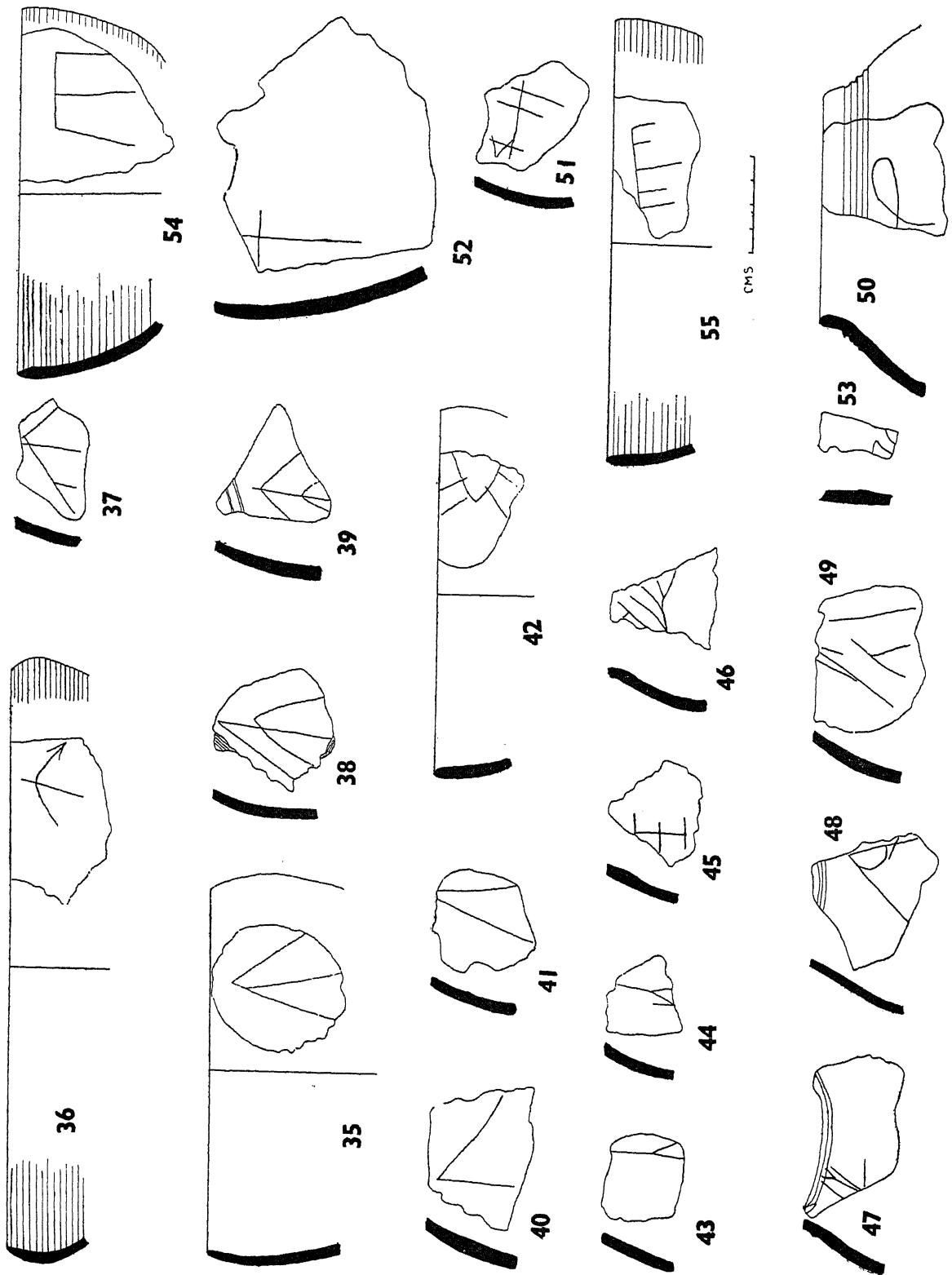


Fig. 30

Graffiti on Pottery : Figures 35-55

from the lowermost layers (Layer 15) and was found close to the bead-necklace at a depth of 14 ft. and was associated with the large number of crucibles encountered very close to it.

Fig. 30 : 35-55

35. Convex portion of a globular vessel, black all over, turned into a roundel for playing ; incised with arrow-mark (No. 35) in very light strokes. Coarse pottery with a disintegrating black slip. Trench C, Layer (10), Pre-Mauryan.

36. Rim of a black-and-red ware bowl, black all over and decorated with arrow-mark on the exterior. Coarse gritty clay with a soot slip. Trench C, Layer (5), Satavahana.

37. Another fragment, probably the base of a black-and-red ware dish, incised with arrow-mark. The central line of the arrow does not intersect the junction of the oblique lines and has an additional stroke near the base. Trench C, Layer (10), Pre-Mauryan.

38. Potsherd decorated with mark 38 resembling an arrow-head with an additional stroke at the left base ; very coarse chocolate coloured pottery unslipped in the interior and having a reddish slip on the exterior only. Trench C, Layer (10), Pre-Mauryan.

39. Fragmentary neck portion of a black-ware vessel with corrugation marks in the upper portion. Decorated with a mark resembling a tree (?). Coarse gritty clay slipped with a clayee wash on the exterior. Trench C, Layer (11), Pre-Mauryan.

40. Fragment of a red-ware vessel scratched on the outer surface with a letter simulating Brahmi 'GA'. Coarse gritty clay, slipped on the exterior with a clayee wash. Trench C, Layer (10), Pre-Mauryan.

41. Sherd of a black-ware vessel, identical in fabric as No. 40 above. Incised with two strokes simulating Brahmi 'GA'. Trench C, Layer (11), Pre-Mauryan.

42. Rim portion of a red-ware bowl, incised with two strokes meeting each other and both the arms are crossed by two short strokes. Treated with a smooth slip both on the exterior as well as interior. Trench C, Layer (10), Pre-Mauryan.

43. Potsherd incised with two strokes resembling the Brahmi letter 'TA'. Brick red pottery with a reddish slip on the exterior. Trench C, Layer (7), Mauryan.

44. Potsherd with marks similar to No. 43 above, on black-and-red pottery. Trench C, Layer (11), Pre-Mauryan.

45. Red-ware fragment, incised deeply with a variant of the Swastika. Slipped on the exterior with a clayee wash. Trench C, Layer (12), Pre-Mauryan.

46. Potsherd forming the neck portion of a red-ware vessel, deeply incised with non-descript strokes. Light porpus clay with light red slip. Trench C, Layer (10), Pre-Mauryan.

47. Identical as above No. 46, incised with non-descript strokes. Trench C, Layer (10), Pre-Mauryan.

48. Neck portion of a red-ware vessel, incised with two strokes meeting at a point and the space in between has been relieved by a curved stroke. Trench C, Layer (10), Pre-Mauryan.

49. Fragment of a thin sherd incised with parallel strokes meeting in a point, with one of the ends projecting. Red ware treated with mica, bearing no slip. Trench C, Layer (10), Pre-Mauryan.

50. Neck portion of a red-ware vessel, incised deeply with 'MA' like letter or the *Taurus* sign. Reddish slip on the exterior only. Trench E, Layer (7), Mauryan.

51. Fragment of a red-ware vessel, incised with parallel strokes crossing each other, both upwards and downwards. Trench C, Layer (11), Pre-Mauryan.

52. Large fragment of a red-ware vessel with a dull chocolate slip marked with a cross. Trench C, Layer (20), Period I.

53. Top portion of a rim of black-and-red ware bowl, incised deeply with a floral pattern, fragmentarily preserved. Trench B, Layer (6), Mauryan.

54. Rim of a black-and-red ware vessel, incised with three vertical lines crossed by a horizontal line at the top. Trench C, Layer (8), Pre-Mauryan.

55. Rim of a bowl, incised with one horizontal line crossed by one in the centre and by two short strokes on either side simulating the water-carrying bingo or Kavād. Black ware, with a chocolate slip in the interior only. Trench C, Layer (9), Pre-Mauryan.

ADDENDA TO THE POTTERY WITH GRAFFITI

For the sake of a comprehensive study of the graffiti marks on pottery, additional specimens are noted below but are not illustrated:

- (1) Black-and-red ware incised with arrow-mark similar to Nos. 9, 13, 15, 16, 22, 27, 35 and 38.
 Trench C, Layer (+9), Pre-Mauryan.
 Trench C, Layer (10), Do.
 Trench C, Layer (9), Do.
 Trench C, Layer (20), Period I.
- (2) Black-and-red ware with incised cross (Nos. 8, 24, 32).
 Trench E, Layer (7), Mauryan.
 Trench C, Layer (7), Do.
 Trench C, Layer (9), Pre-Mauryan.
 Trench C, Layer (20), Period I.
- (3) Ladder mark (No. 3) on a red-ware fragment.
 Trench C, Layer (10), Pre-Mauryan.
- (4) Bowl mark (Nos. 30 and 34) on red-and-black ware fragment.
 Trench C, Layer (9), Pre-Mauryan.
- (5) Three disconnected lines (Nos. 23, 28) deeply incised on a black-and-red ware bowl.
 Trench C, Layer (4), Satavahana.
 Scratched on a red-ware neck fragment.
 Trench C, Layer (8), Mauryan.

A. BEADS

IN spite of the very limited extent of the excavation, the total yield of beads from Kaundinyapura was quite high being 395 in number. Of these 98 came from the Bhim Tekdi and 297 from the sector Kdn-2. Besides a large quantity of beads (nearly 120) was collected as surface finds, mainly from the slopes of the mound and picked up while the area was being surveyed for a contour map. The periodwise distribution of these was as follows: Period I, 54 beads in a necklace; Period II, 20 beads; Period III, 103 beads; Period IV, 105 beads; Period V, 17 beads; and Period VI, 14 beads; unstratified beads, 6 specimens. As the area under excavation was very small it is difficult to say if this distribution is indicative of the popular demand in any particular period or its phases. There is reason to believe that a small scale industry for the manufacture of beads existed at the site during Period IV evinced from the several unperforated specimens and an exquisitely worked banded agate bead which required polishing and drilling only. Three large circular thick discs of agate (2 from surface and 1 from excavations in Period IV) identified as the covers of pots in which beads were heated for enhancing their colour, were also found, as at Ujjain.¹ (See Plate XXXIII.)

The material of the beads comprises of semi-precious stones (silicon minerals) of both crystalline and crypto-crystalline varieties of quartz, including rock crystal, Amethyst, carnelian, agate (plain and banded), chalcedony, jasper (both green and red); lapis lazuli of feldspathoid variety; shell, glass and terracotta. Copper was represented by three specimens. Glass seems to have been introduced during Period III. In general the use of carnelian, agate, jasper and crystal seems to be very widespread; but the excavations were not extensive enough to discuss this matter more fully.

Nearly 50 per cent of the total number of the beads found at the site were of carnelian and the etched beads associated with Period I deserve special mention. The practice of etching beads in India is as ancient as the Harappa Culture. Beads are found decorated with white patterns on the surface of carnelians and agates (rarely on any other crystalline material) by the treatment of alkali like soda for which the juice of a plant called *Kirar* was employed. A very large range of patterns is found amongst the beads so decorated and a comprehensive study of these, with special reference to their geographical distribution has been attempted by this writer in his monograph on Etched Beads in India.² Beads with radial strokes abound in a good number at Kaundinyapura, along with other patterns. The distribution of the former in megalithic cultures³ in South India has an important bearing on the chronology of the site.

Steatite disc beads from the site are also important in this respect because, though not exactly identical with similar material from the Indus Valley sites, they constitute a class which scarcely re-appears in India after the Mauryan Period and therefore have a dating value. At Kaundinyapura six of them occurred in Period II and had a continuity as late as Period V along with a stray in Period VI also. The hard porcelain-like appearance and the uniformly good quality of these beads is noteworthy. The exact value of this bead-type as an aid to determine the chronology of the site can only depend upon future extensive work.

¹ N. R. Banerjee, "The Technique of the manufacture of stone beads in Ancient Ujjain" *Journal of the Asiatic Society*, Vol. I, No. 2 (1959), pp. 189-196, Plate II.

² Etched Beads in India, Deccan College Monograph Series No. 4, Poona 1949.

³ The tablet-shaped bead bearing an etched cross on both the sides affords an interesting parallel to a specimen from the megalith at Porkalam.

Rock-crystal employed for the beads and other material like ear-plugs and even a fragmentary relic-casket (No. 186, Layer 11, Period III) shows that the lapidaries of Kaundinyapura were very particular in selecting the most transparent material. The bi-cone square barrels of Period III deserve a special mention in this respect. The dating value of these beads for the Mauryan Period is again confirmed by the present excavations. The workmanship of all the crystal beads is as perfect as it should be expected from a transparent material like crystal. The workmanship of the fragmentary relic-casket cannot be judged as the specimen is too small but is sufficiently indicative of the finer tastes of the people and their ability to work on the material. Three ear-plugs of crystal may here be mentioned in this connection.

Jasper, though represented by a few specimens, was equally well-worked; the best specimens are the beads as also the elegantly polished ear-plugs which are some of the finest specimens found in the excavation.

Lapis lazuli is represented by a few specimens like a cylindrical circular and square bead. As the material is not indigenous to India, being mostly found in Afghanistan, it must have reached the site by way of trade.

Glass as the material is represented by ten beads only. One of them is the usual variety of cane glass of opaque copper red colour, which has a wide distribution in India. Its occurrence in Layer (8), Period III, corresponding to the Mauryan strata is not without significance. Exactly identical glass occurs in the Bhir Mound at Taxila and is much more common in the Satavahana Period in the Deccan and widely prevalent in regions where copper-ores were being extracted in ancient times. The most important type however is the 'Eye' bead of stratified blue glass from the Mauryan stratum. A full history of this bead type is given below at pp. 88-102.

Chart showing Distribution of Beads

Material	Period I	Period II	Period III	Period IV	Period V	Period VI	Un- stratified
Carnelian—							
Plain	34	19	48	46	3	6	1
Etched	20	....	4	2	....	....	....
Agate	....	....	15	13	1	1	9
Crystal	....	2	15	18	3	....	2
Garnet	....	....	....	2	....	....	....
Amethyst	....	....	1	....	....	....	....
Jasper	....	1	2	6	1	....	1
Lapis Lazuli	....	....	1	2	....	....	3
Steatite	....	6	11	5	3	1	14
Shell	....	....	4	6	1	....	....
Glass	....	....	1	7	....	....	2
Terracotta	1	1	2	1	3	6	34
Gold	....	....	2	....	....	....	....
Copper	....	....	....	3	....	....	....
Total	54	29	106	111	15	14	66

BEADS

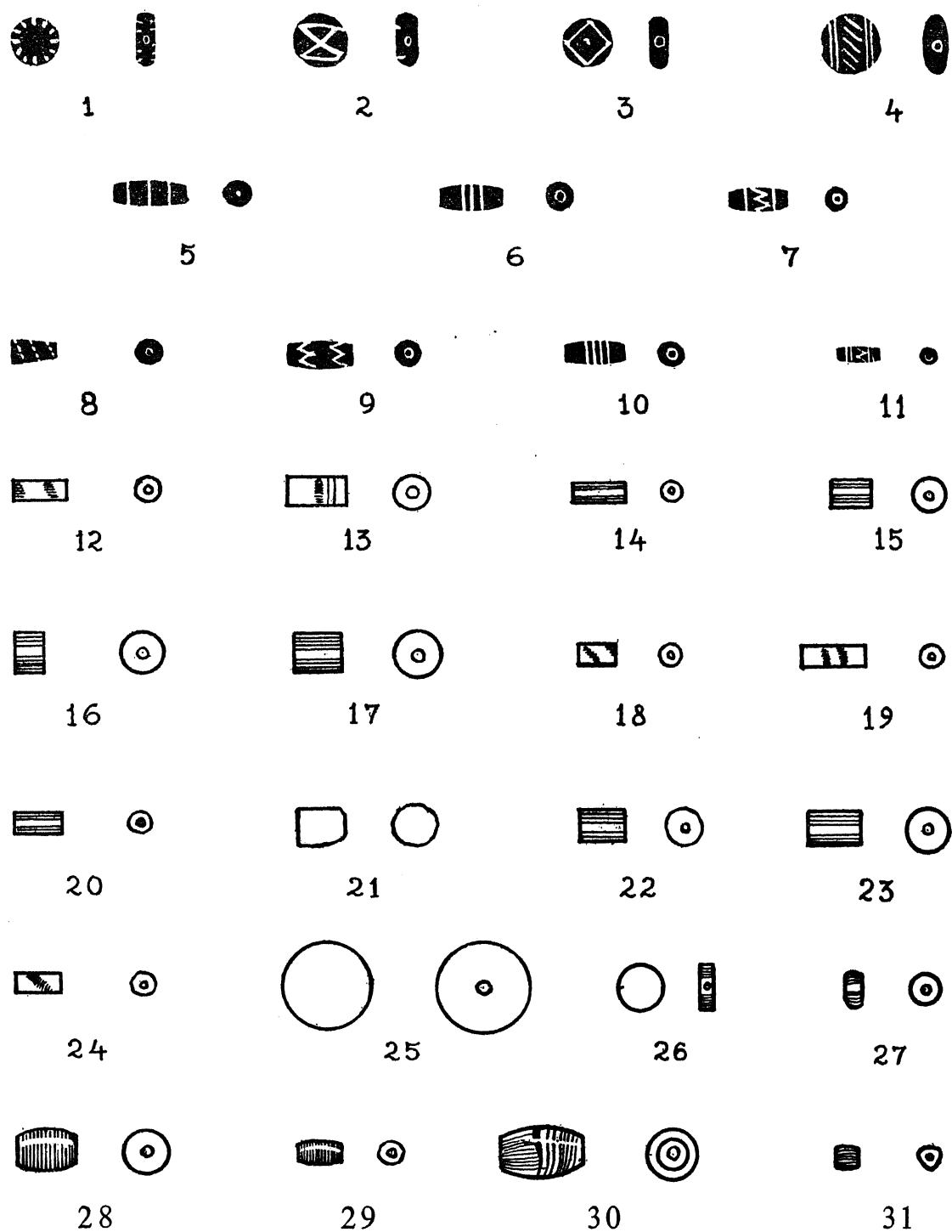


Fig. 31

1-11 Etched Carnelians. 12-27 Plain Carnelians. 28-31 Banded Agate

ETCHED BEADS

Fig. 31 : 1-11

The etched carnelian beads from Kaundinyapura fall into two distinct categories—

- A. Circular-tabular beads and
- B. Long barrel circular beads.

A. The circular tabular beads, represented by six examples in the necklace from Layer (15) and four strays from various levels in the excavation indicates the following types of decorations:

(1) Tablet bead decorated with short marginal strokes at the periphery, corresponding to Pattern 24 in my book on Etched Beads in India.¹ The decoration is resorted to on both the faces of the bead. Three examples in the necklace (diameters varying from 3 mm. to 3.5 mm.) have the strokes set close together about 3 mm. apart and have nearly the appearance of small dots. The larger fourth bead is 8 mm. in diameter and has the strokes in a very bold hand and are well spaced [also No. 262 (Tr. Z), Layer 7]. (Fig. 31:1) [Plate XXIX, A 13-15. B-28].

(2) Another tablet bead in the necklace is about 8.5 mm. in diameter and has double-axe pattern etched on both the sides. The pattern does not extend into the thickness of the side. (Fig. 31:2) [Plate XXIX, A-18].

(3) Another bead, 7.5 mm. in diameter, has a square with a horizontal line in the centre. When strung the square has its apex at the top. The design is very bold. (Fig. 31:3) [Plate XXIX, A-16].

(4) Tablet shaped bead, 1.5 cm. in diameter, etched with a cross enclosed within a hollow cross, the design appearing on both the sides of the bead. No. 270, Trench Z (10). The pattern is similar to two specimens from Porkalam (without the enclosed cross).² [Plate XXIX, B-26].

(5) Another bead from the Mauryan stratum in Kdn-2 has short slanting strokes (5 and 6 respectively on each side) laid in between double lines at the margin. The pattern appears on both the surfaces. (Fig. 31:4) [Plate XXIX, A-17].

(6) Tablet-shaped bead, 7 mm. in diameter, etched with adjacent diamonds or elongated almonds with dashline strokes in their centres, in imitation of eyes and pupils, appearing on both sides. No. 108, Trench C, Layer (5), Satavahana [Plate XXIX, B-24].

B. In the second category of barrel-shaped circular beads the following five varieties of patterns are noticed:

(1) Three zonal lines spaced at regular intervals all over. (Fig. 31:5) [Plate XXIX, A 1-6].

(2) Three zonal lines forming a band in the centre of the bead. (Fig. 31:6) [Plate XXIX, A 7-12].

(3) Wavy lines in between marginal bands. (Fig. 31:7) [Plate XXIX, A-19].

¹ *Etched Beads in India*, Plate XVII, 10.

² *Ancient India*, No. 8, Fig. 5 : 8 and Pl. V, B-8.

(4) Zigzag line in between a double marginal band on either side. Some of the beads decorated in this manner are extremely tiny and show a fair amount of accuracy and firmness of hand. One large specimen, possibly a stray, was a surface find. (Fig. 31:11).

(5) Two beads decorated with a continuous dotted line running spirally over the surface like the threads of a screw. (Fig. 31:8). The pattern is very rarely met with.

These are two stray spherical beads from the Satavahana and the Mauryan layers respectively. The first specimen is a large globular bead, 4 mm. in diameter, and is decorated with a wavy line running through central portion longitudinally. No. 200, Trench B, Layer (5), Satavahana [Plate XXIX, B-27]; the second specimen is extremely tiny, being 2 mm. in diameter, and having four longitudinal strokes at regular intervals. No. 384, Trench C, Layer (7), Mauryan [Plate XXIX, B-25].

The beads described under Category A(1), having marginal strokes at the periphery, show a very common mode of etching on beads associated with the megalithic burials in South India. Thirty-nine beads of this variety are known from the megaliths in Salem district; 18 from the megaliths at Vallalur; several in Palghat. These occur in the megaliths from Paravai, in the Wynaad, at Kupgal, at Montappalle near Arikamedu and at Maski.¹ To this list we may now add two more beads from the Mettur Dam site (now in the Beck Collection at the Cambridge Museum of Archaeology and Ethnology) and some examples from the Kuta Kallu urn burials in Malabar.²

The importance of the present finds in Kaundinyapura lies in the fact that this Pattern (No. 24) lies outside the usual zone of similar beads which are mostly concentrated in Southern Peninsular India. In the present state of our knowledge Kaundinyapura happens to be the northernmost limit for this pattern. It may be noted *in passim* that only one stray bead of an analogous type having small dots at the margin (Pattern 24A) has as yet been found in Kosam, and in substance both Patterns 24 and 24A are essentially megalithic. The occurrence of this pattern and others described in category B 1-4, coupled with the incidence of black-and-red ware indicate the megalithic character of Period I at Kaundinyapura with affinities towards the south.

The bead A(2) with the double-axe pattern is not matched by any other example in India and is therefore a new addition to our knowledge of etched patterns.

The third bead A(3) is also a new type though squares within squares are noted at Maski. The pattern on the fourth stray bead A(4), with slanting strokes in between marginal bands is a favourite design on spherical beads in a megalithic context at Porkalam where 14 examples are recorded. The pattern however is not found on tabular beads as at Kaundinyapura.

The barrel-shaped circular beads from Kaundinyapura belong to a class of beads which were popular in many parts of India during the early historical period and in certain cases in an admittedly megalithic context. Beads with a wavy in line between marginal bands B (4) occur at Sanur, Porkalam, Sanganakallu and are paralleled by the specimens from Kaundinyapura. Those having screw-like spirals are not noticed elsewhere so far. In general the etched patterns at Kaundinyapura offer many new varieties and points for further inquiry.

¹ Cf. *Etched Beads in India*, p. 27, Pl. XVII.

² Logan, *Malabar*, Vol. I, p. 180, Pl. XII.

EXCAVATIONS AT KAUNDINYAPURA

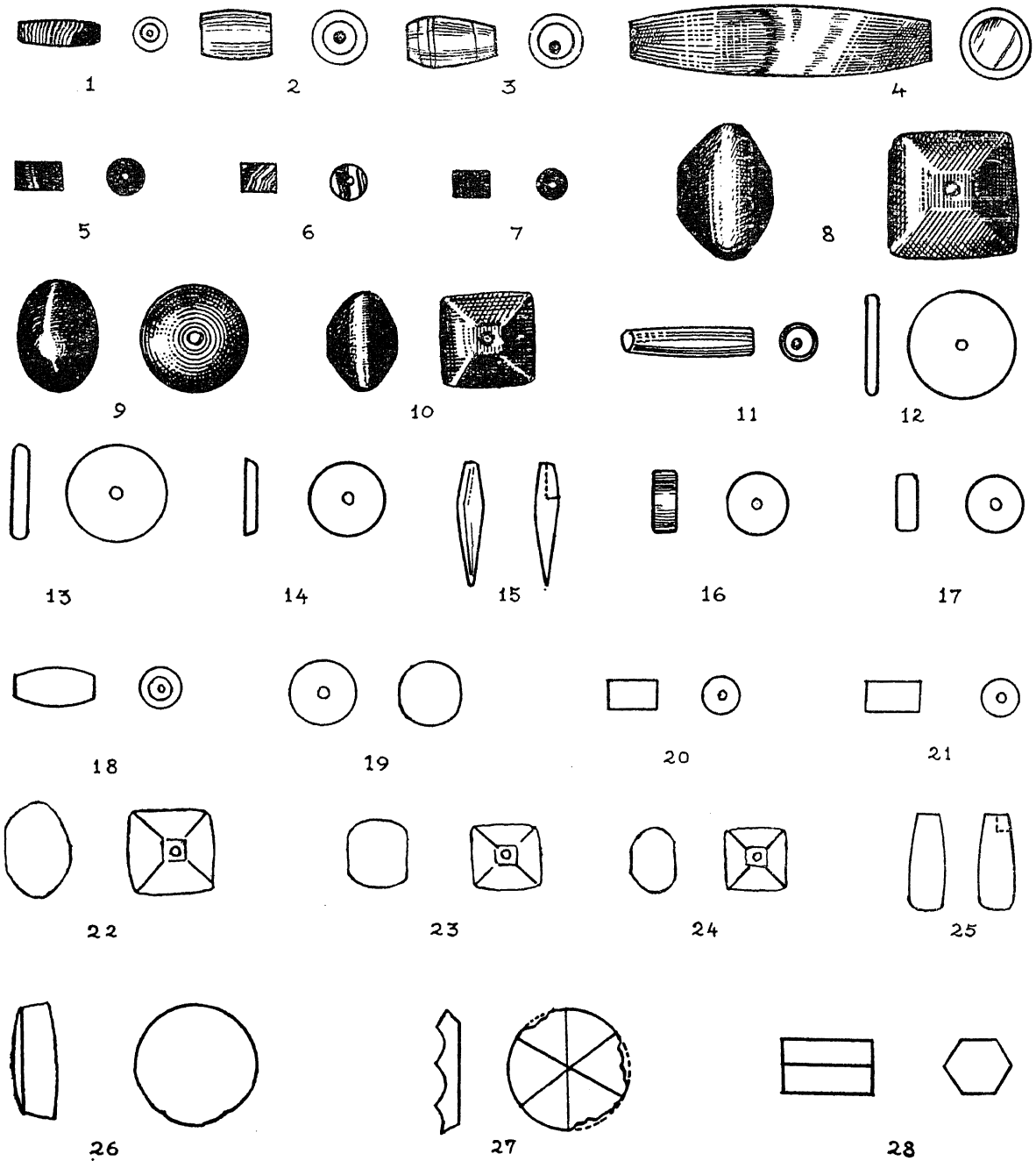


Fig. 32

1-9 Banded Agate. 10 Jasper. 11 Lapis lazuli. 12-17 Steatite. 18-27 Crystal. 28 Amethyst.

PLAIN CARNELIAN BEADS

Fig. 32 : 1-25 [Plate XXX, 1-28]

The number of carnelian beads found in the excavation is quite large. Fourteen were in the necklace from Layer (15) while others came from various strata in the course of digging. Besides quite a large number were collected as surface finds especially from the site Kdn-2.

The principal shapes were short convex barrel-circular, short cylinder circular tabular amongst the excavated specimens; but spherical, bi-cone square, convex barrel-square, standard barrel-shaped triangular, are some of the shapes noticed amongst the beads collected from surface. Though the latter have no stratigraphic value the range in shapes is sufficient to show the potentialities at the site and the richness and variety in their making. The short cylinder circular appears to be a very favourite shape being found in most materials and the large quantity in which they are encountered.

The beads show the following distribution :

D4 (4 beads):

125	Layer	(7)	Short cylinder circular.
140	Layer	(9)	Do.
141	Layer	(9)	Do.
142	Layer	(9)	Do.

B3 (11 beads) :

93	Layer	(1)	Spherical.
130	Layer	(9)	Short cylinder circular.
131	Layer	(9)	Do.
132	Layer	(9)	Do.
136	Layer	(9)	Do.
155	Layer	(8)	Unfinished roughened barrel circular.
173	Layer	(8)	Short cylinder circular.
197	Layer	(7)	Do.
188	Layer	(11)	Circular, tabular.
189	Layer	(11)	Short barrel circular.
228	Layer	(14)	Barrel shaped circular.

Out of the 15 beads 10 are short cylinders. Most of them are concentrated in Layer (9) immediately below the NBP yielding layer at Kaundinyapura and therefore seem to be most popular at the site towards the end of Period II.

The stone used for the carnelian beads is of a very good quality and is well tinted, and medium polished. The geometric shapes are perfect as if turned on the lathe. The sides are well rubbed into and the usual method of drilling from two ends is followed in each example.

AGATE BEADS

The number and the varieties in the agate beads from Kaundinyapura is considerably small as compared to the carnelian specimens. Barrel circular, short cylinder circular and bi-cone square are the only three shapes encountered, and are distributed as follows:

Barrel-shaped circular beads:

126	Layer (7)	Banded agate.
Kdn-2-105	Top spoil	Do.
Kdn-2-106	Top spoil	Plain agate convex barrel.
Kdn-2-77	Layer (8)	Unfinished long barrel bead.

No. 2-77 is a particularly fine specimen with charming colours without perforation and does not bear any polish. Even in its unfinished state it speaks for the careful selection of the material.

Short cylinder circular beads:

Kdn-2-107	Layer (8).
Kdn-2-108	Layer (8).
113	Layer (6).

There is nothing noteworthy about these beads except that their material is very well chosen with pleasing colours in the bands. Their ends are nearly parallel to the alignment of the natural bands.

Square bi-cone barrel-shaped beads:

Kdn-2-98 Layer (8).

This shape is represented by one stratified find only but there are several beads of this shape amongst the surface collections and is particularly common amongst crystal beads.

Short convex barrel circular:

94 Layer (3).

There is only one bead of this shape amongst the stratified specimens; but these occur frequently in the surface collection. The excavated example is very highly polished but the material selected shows many misformed eyes in the structure.

JASPER BEAD

There are only eleven jasper beads of which No. 190 Layer (9) belongs to the Mauryan Period. It is a bi-cone square bead of a familiar type. While boring through one of its ends, some difficulty in meeting the perforation was encountered, and is compensated by having another adjacent hole near the first one. It is roughly finished at one end.

LAPIS LAZULI

Lapis Lazuli is not indigenous to India and only three beads were found in the excavation. No. 2-109 Layer (9) is of a very common shape being long cylinder circular. The material is very well chosen having a very deep blue colour and shows considerable signs of wear due to use. It belongs to the Mauryan Period.

Two more beads of Lapis Lazuli from the second season are as follows:

No. 84 Tr. C. (4) Small tablet-shaped bead.

No. 450 Tr. C. (7) Long Cylinder, Rectangular.

There is nothing noteworthy about their forms.

CRYSTAL BEADS

(Plate XXXII, A, 1-15)

Crystal beads and other objects constitute some of the most delicately made antiquities found at Kaundinyapura. There is not a single instance in which defective material seems to have been used. The stones are pure, transparent and very well shaped. There are no instances of cloudy, smoky, crackled or otherwise impure material being used. The stone is used in a number of ways, for articles like beads, ear-plugs and reliquaries.

The excavated beads represent the following shapes—spherical (5); long barrel circular (3), short barrel circular (4); long cylinder circular (3+6), cornerless cube (1); short-convex barrel, lens-shaped (0+1); convex barrel triangular (0+7); convex barrel square (3+3); bi-cone hexagonal (2); long barrel hexagonal, flattened (1); long barrel hexagonal regular (1+1) (1 unbored).

The total number of beads is thus six from site Kdn-1 and 3 + 32 (=35) examples from Kdn-2 i.e. 41 beads. Besides these a large number of crystal beads were collected as surface finds from the western slope of mound Kdn-2 but these have not been taken into account.

Long barrel circular beads predominate in crystal as in other materials, there being as many as nine specimens. Convex barrel, triangular in section contribute as many as seven specimens and these appear to be the most popular forms noted at Kaundinyapura.

Amongst the spherical beads, there is one specimen which has been bored from one end only, as against the usual practice of boring through both the ends. A small cavity or depression seems to have been made for steadying the drill in this specimen and is a feature very commonly noticed amongst beads of other materials.

Of special interest are (i) a convex barrel bead with a lens-shaped cross section (Pl. XXXII, A-8); (ii) a cornerless cube (Pl. XXXII, A, 6); two convex barrels square in cross section (Pl. XXXII, A, 11-12); a regular long barrel hexagonal bead (Pl. XXXII, A, 15) and a pendant (Pl. XXXII, B, 5).

The following are illustrated: (Plate XXXII, A, 1-15)

(1) Spherical bead of crystal, of a very fine quality. No. 275, Trench B, Layer (3), Satavahana.

(2) Spherical bead of crystal, perforated in a single operation and having a conical depression at one end for steadying the drill. No. 95, Trench C, Layer (4), Post-Satavahana.

(3) Long barrel, circular, with a V-perforation. No. 279, Trench B, Layer (6), Mauryan.

(4) Long cylinder, circular, with the sides rubbed on a whetstone. No. 278, Trench B, Layer (6), Mauryan.

(5) Short cylinder, circular, of a typical shape in Kaundinyapura. Satavahana.

(6) Cornerless cube bead of very transparent crystal, with very well developed facets; a rare shape at Kaundinyapura.

(7) Standard barrel, circular. One end shows that a depression was necessary for steadying the drill, perforation finished in one operation only. No. 370, Trench C, Layer (+ 8), Pre-Mauryan.

(8) Short convex barrel, with a lens-shaped cross section, a rare shape. No. 105, Trench C, Layer (5), Satavahana.

(9) Standard convex barrel, triangular bead of crystal. Double perforation of short and medium lengths. No. 396, Trench Z, Layer (7), Mauryan.

(10) Standard barrel triangular, smaller in size than the previous example. No. 131, Trench B, Layer (4), Satavahana.

(11) Standard barrel, square, small size. No. 176, Trench C, Layer 5, Satavahana.

(12) Standard convex barrel, square, larger size, slightly broken. Mauryan.

(13) Truncated bi-cone hexagonal bead of crystal with a few internal striations. Perhaps an early specimen re-used. No. 372, Trench C, Layer (4), Satavahana.

(14) Long barrel, hexagonal, flattened; considerably worn specimen. No. 237, Trench B, Layer (6), Mauryan.

(15) Long barrel, hexagonal regular, very highly polished and well made. No. 451, Trench C, Layer (6), Mauryan.

(Plate XXXII, B, 1-5)

- 1-3. Crystal ear-plugs (Fig. 32 : 26-27, *see below* pp. 126-130). Mauryan.
4. Portion of a crystal reliquary. No. 186. Layer (11). Period III.
5. Crystal pendant; with L-perforation (Fig. 32 : 25).

GARNET

(Plate XXXI, 6-8)

- 53 Tablet-shaped bead, Post-Mauryan.
- 271 Cross-shaped spacer, perforated both horizontally and vertically. Mauryan.

AMETHYST

- 264 Long-barrel-hexagonal. (Fig. 32 : 28)

UNFINISHED BEADS

(Plate XXXIII, B)

(1) Long cylinder, circular bead of banded agate, without perforation; sides smoothed on stone by whetting. No. 380, Trench C, Layer (4).

(2) Long cylinder circular bead of banded agate, roughly finished not perforated or perfected into shape. No. 125, Trench B, Layer (4).

BEADS

(3) Spherical bead of chalcedony, highly polished, perforation is attempted at one point but left unbored at the end. No. 87, Trench C, Layer (4).

(4) Long cylinder of pale carnelian, very roughly finished and not perforated. No. 307, Trench B, Layer (4).

(5) Long barrel circular bead of banded agate of very fine quality, $2\frac{3}{4}$ cms. in length. No. 308, Trench C, Layer (4).

(6) Similar to above, length 3.2 cms. No. 308A, Trench C, Layer (4), Satavahana.

(7-10) Four beads of banded agate, rectangular, tabular in shape, cut from bi-coloured stone, one portion in milky white and the other in pale or brownish yellow. Unperforated. Nos. 211, 182, 182A and 251, Trench C (for first three) and Trench B, Layer (5).

(11) Tablet-shaped bead of carnelian, partly finished and unperforated. No. 252, Trench B, Layer (5).

(12) Long cylinder circular bead of black agate, partly finished but left unperforated. No. 309, Trench B, Layer (5).

(13) Spherical unfinished bead of red jasper, not perforated. No. 310, Trench B, Layer (5).

It is difficult to arrive at any definite conclusions regarding the popularity of any particular shape in the various periods known at the site; but the following distribution chart will prove instructive:

Long barrel circular	..	D4 119 Layer (6)	..	Late Satavahana.
Spherical	..	B3 178 Layer (9)	..	Pre-Mauryan.
		B3 134 Layer (7)	..	Post-Mauryan very tiny.
Long cylinder circular	..	B3 137 Layer (7)	..	Post-Mauryan.
		B3	..	Surface unstratified.
		2-81 Layer (8)	..	Mauryan.
Convex square bi-cone	..	B3 153 Layer (8)	..	Mauryan.
		B3 185 Layer (10)	..	Pre-Mauryan.
		2-98 Layer (8)	..	Mauryan.
Barrel-shaped drop pendant	..	2-89 Top-spoil	..	....

It is interesting to observe that convex barrel square beads, which have a strikingly Mauryan affinity on other sites in India, seem to have been corroborated by the numerous finds at Kaundinyapura.

FAIENCE BEADS

Faience is a hard porcelainous material consisting of quartz grains fused with lime and its quality is dependent on the temperature and the proportion of the ingredients. If fused at low temperature the quartz grains have a tendency to retain a loose core resembling pottery. Beads made in this way generally crumble to pieces if left in the soil for a long time but those fused at very high temperatures retain a very highly polished vitreous surface and do not break easily. Sometimes the faience beads are found to be treated with a light glaze tinted blue or blue-green of a pleasing colour and are known to

have a very high antiquity in India. Disc-shaped beads are of common occurrence on Chalcolithic sites in India and are a characteristic feature on many Indus Valley sites.

The faience beads recovered from Kaundinyapura belong to the hard baked variety and are so well fused that it is difficult to break them except with hammer strokes. On account of their extreme hardness the beads encountered are generally entire and have a pleasing porcelainous appearance. In a few cases they appear to have a dull grey shade. These are obtained in two shapes (1) short bi-conical disc circular and (2) short barrel circular. The short bi-conical discs appear to be characteristic at the site as several examples were found in the excavation proper and quite a number amongst the specimens collected from surface. The composition seems to have been made into a large circular cylinder and the individual specimens were cut from it either with a thread or a sharp instrument before firing. The bi-conical edges seem to have been fashioned after firing by rubbing them against hones or specially made grooved stones. This operation often leaves the inner edge of bead a symmetrical to the original circular contour of the bead. Generally the beads are made with great precision. The perforation which seem to have been made after the composition was sun-dried. They are perfectly circular though a few amongst them have attrition marks as result of long wearing.

The short disc circular beads show the following distribution :

B3	No. 92, Layer (2)	A stray find in Muslim layers.
	No. 181, Layer (9)	Pre-Mauryan or Megalithic.
	No. 182, Layer (9)	Do.
	No. 183, Layer (10)	Do.
D4	No. 233, Layer (7)	Satavahana.
	No. 112, Layer (6)	Do.
	No. 127, Layer (7)	Do.
	No. 148, Layer (8)	Mauryan.
	No. 169, Layer (9)	Pre-Mauryan.
Kdn-2	No. 172, Layer (9)	Do.
	2-76, Layer (3)	Satavahana.
	2-83, Layer (10)	Mauryan.

The type though sporadic in occurrence in the post-Mauryan layers at the site is mainly megalithic in origin and is very strongly represented in those layers. Of these Nos. 92, 112, 127 and 233 are blackened and have a dull grey appearance while the rest of the specimens are milky white. The shape is represented amongst several unstratified specimens collected on the site.

The short barrel beads, circular in section, are represented by three specimens only. Of these one (No. 109) occurred in Layer (6) in sq. B4; another one (No. 168) came from the same area and is from Layer (9) corresponding to the pre-Mauryan Period. Sq. B3 also yielded a solitary specimen (No. 176) from the pre-Mauryan deposits. This type therefore like the preceding one seems to be pre-Mauryan in origin.

Seven disc beads are illustrated on Plate XXXIV, B. 1-7; and a few typical specimens of both the types of faience beads are shown in Fig. 32 : 12-17.

TORTOISE-SHAPED AMULET¹

Associated with the Satavahana layers was found a small faience amulet (No. 45) Trench C, Layer (4) shaped like a tortoise. This tiny specimen measures about 1 cm.

¹ Dikshit, M. G., Notes on Indian Amulets, *Bulletin of the Prince of Wales Museum*, No. 2, pp. 92-93.

in length and 8 cm. in breadth and is perforated across the body in between the pair of legs. The material is a fine deep green faience which has developed a crack either due to its being lain in the soil or as a result of indifferent firing. The workmanship however is very fine and speaks highly about its quality. The specimen was encountered in Layer (4) and was probably an old specimen re-used in the post-Satavahana Period. In the illustration it is enlarged two times to bring out the details prominently.

In India tortoise-shaped amulets have a very hoary antiquity; the earliest specimen known so far has been assigned to the 1st millenium B.C. in Maharashtra. These are fairly common in the early centuries of the Christian era, but they gradually seem to go out of fashion after 3rd century A.D. There is reason to believe that certain specimens attributed to *circa* 1300-1400 A.D. are old amulets re-used in a later period. Nearly 170 specimens of tortoise-shaped amulets are so far known in India which are tabulated in the accompanying chart.

These amulets were no doubt used as symbols of longevity and other sacred associations. I have discussed this point elsewhere and the same ground need not be covered again. It is however interesting to observe that in some mediaeval images of Karttikeya from Orissa,¹ the tortoise pendant is displayed prominently.

TORTOISE-SHAPED AMULETS IN INDIA

(a) Dated specimens

(1) Prakashē	..	Shell, 1954-55 Excavations	1st Millenium B.C.	Unpublished, Information from Shri B. K. Thapar.
(2) Nevasa	..	Shell, 5 specimens 1960-61 excavations.	200 B.C.—1st century A.D.	Information from Dr. H. D. Sankalia.
(3) Taxila Dharmarajika Stupa.		Garnet	.. 1st century B.C.	.. Beck, Pl. VII, 25.
		Mother-o-pearl	.. 1st century B.C.	.. Beck, Pl. VII, 26.
(4) Sirkap Taxila	..	Glazed Quartz	.. 1st century A.D.	.. Beck, Pl. VII, 22.
		Green Faience	.. 1st century A.D.	.. Beck, Pl. VII, 23.
		Faience	.. 1st century A.D.	.. Marshall's List, No. 2196, No. 3408.
		Malachite	.. 1st century A.D.	.. Unpublished.
(5) Sambhar (Jaipur State).		Glazed faience	.. 1st century A.D.	.. Sahni, <i>Excavations at Sambhar</i> , p. 36, Pl. XV, 1.
(6) Kosam	..	Terracotta, 1940 excavations, No. 416.	1st century A.D.	.. Unpublished. Beads examined by Dr. M. G. Dikshit.
(7) Ter (Maharashtra)	..	Shell, 1957-58 excavations, No. 2181.	1st century A.D.	.. Unpublished. There are about 60 tortoise amulets of shell in the Lamture Collection at Ter.
(8) Kaundinyapura	..	Green faience	.. 200-400 A.D.	.. Present Report.
(9) Ujjain, Central India.		Agate	.. 1300-1400 A.D.	.. J.A.S., I, 1959, Plate V, 57. We regard this specimen as a late intrusion or an instance of an old amulet re-used.

¹ Cf. A figure of Karttikeya from Puri, Orissa, dated 11th century A.D., illustrated by Stella Kramrisch, *Indian Sculpture* (Pennsylvania, 1960), Plates 9 and 10. The photograph of an image of Karttikeya from the Kedarnath Temple at Bhuvaneshwara in the Nagpur Museum, shows a tortoise in the necklace.

EXCAVATIONS AT KAUNDINYAPURA

(b) Unstratified specimens

(1) Akra (Bannu)	..	2 crystal amulets	..	British Museum.
(2) Ahichchhatra	..	1 Garnet	..	<i>Ancient India</i> , No. 8, p. 48.
(3) Aundh (Satara)	..	4 Shell	..	Information from Shri M. R. Inamdar of Bhavani Museum, Aundh.
(4) Balapur (Chhattisgarh)	..	1 Banded Agate	..	Information from Shri Lochan Prasad Pandeya (Letter dated 1st December 1952).
(5) Kosam	..	14 specimens mentioned in <i>Art of India and Pakistan</i> , p. 24, entry No. 43, comprising of Chalcedony, agate, crystal, etc.	..	Allahabad Municipal Museum, Allahabad.
		1 Banded Agate	..	Bharat Kala Bhavan, Varanasi.
		1 Tinted Carnelian	..	Patna Museum.
		1 Chalcedony	..	Jineshwar Das Collection, Allahabad.
		6 specimens	..	
(6) Madhuri near Banaras	..	1 Carnelian	..	Bharat Kala Bhavan, Varanasi.
(7) Manikyala	..	1 Carnelian	..	Cunningham's Collection, British Museum.
(8) Maski	..	1 Shell	..	<i>Hyderabad Archaeological Report</i> , 1935-36, Pl. VI, figure at bottom.
(9) Nasik	..	2 Carnelian	..	Vaishampayan Collection, Nasik.
(10) Patna (Kumrahar)	..	2 Carnelian	..	Patna Museum, Patna.
(11) Prakashe	..	2 Shell	..	Desai Collection, Nandurbar.
(12) Rajghat, Banaras	..	2 Terracotta	..	Bharat Kala Bhavan, Varanasi.
(13) Sahari Bahlol	..	5 specimens (Material not indicated).	..	Col. Gordon's Collection.
(14) Taxila	..	1 Chalcedony	..	Dikshit Collection.

GLASS BEADS

Though a very large number of glass beads were recovered as surface pickings on mound Kdn-2, the actual number of specimens recovered from the excavation proper was surprisingly very small. Beads recovered from the Satavahana stratum contained some of the distinctive types which are widely distributed on early historic sites in India. Copper and cobalt coloured cylindrical circular beads both with lug and/or groove collars, were represented by as many as five specimens, from Stratum IV. Unstratified specimens indicated the incidence of blue cylinder square beads with white oblique stripes and beads inlaid with gold-foil which are common to many Satavahana sites in the Deccan. In the Mauryan levels was encountered one annular bead of orange coloured devitrified glass [Layer (8) Stratum III], which appears to have a wide distribution in India where copper ores were being extracted in ancient times. Of great importance however is a stratified eye bead of blue glass *i.e.* having blue eyes surrounded by white rings, encountered

in Trench C below the pebble foundations of a wall (Plate XV. B). This is a small fragment, about 1 cm. in length and about $1\frac{1}{2}$ cm. in diameter when complete. Only two of the blue rings with the white 'saucers' around are now preserved and seems to have been manufactured by superimposition of different coloured glasses one over the other. This stratified 'eye' bead is one of the most sophisticated and distinctive type of beads for the Mauryan Period in India, and appears to be imported into the country through foreign cultural contacts.

The earliest date¹ for such beads at Taxila is *circa* 5th century B.C. Of 4th century B.C. there are as many as eighteen beads², while the Mauryan stratum (Period II) has encountered no less than six beads³. On account of the continued impact of foreigners at Taxila, such beads continue to occur at the later site of Sirkap till 1st-2nd century A.D. Four examples⁴ occurring at Sirkap are dated 1st century A.D.

In peninsular India, the distribution of stratified 'eye' beads is limited to the Mauryan Period exclusively and are thus known from a few sites only. At Sravasti⁵ two beads of this variety were found in Stratum I attributed to a period between the end of the Painted Grey Ware cultures and 4th century B.C. At Ujjain⁶, which was the traditional seat of Asoka's viceroyship, one eye bead (of glass) is attributed to Period II dated between 500-200 B.C. Several beads of this type are known from the Gangetic Valley but they are surface finds. At Rajghat⁷ four specimens were recovered, two of which are preserved in the Bharat Kala Bhavan, Banaras and two others are in the author's collection. There is another bead in the last named collection which is said to have come from Ahichchhatra⁸. Amongst the beads sent to the author for study by the Allahabad University Kaushambi Expedition there were two beads of the same variety from pre-NBP levels but both these had corroded very badly leaving a yellow mass and faint traces of blue eyes⁹. Our knowledge of stratified eye beads¹⁰ is thus confined to about 39 specimens.

The technique of the manufacture of these beads can best be studied at Taxila which has yielded the largest number of examples of this class (29). In making them layers of different glasses were overlaid on a matrix in the form of small flans superimposed one over the other, the apex being represented by the 'eye'. These are cleverly manipulated to form the design of an eye surrounded by marginal rings in white. There are two main tendencies in the decoration. In one the eyes are distinctly separated from each other and appear as patches on the bead surface. In the other the eyes and the marginal ring or rings of different colours are arranged in a group of two or four and are so spread on the bead surface that the inner matrix of the bead is scarcely seen. Among the Indian examples both the types are known.

¹ Beck, *Beads from Taxila* (MASI, 65), Plate I, 14. (Fig. 33 : 1).

² *Taxila Museum List*, No. 4726.

³ Beck, *op. cit.*, Plate I, 13, 15-18 ; *Taxila Museum List*, No. 4734.

⁴ *Taxila Museum List*, Nos. 3745, 3323, 1941 and 2564 in addition to Beck, *op. cit.*, Plate I, 19.

⁵ *Indian Archaeology*, a review for 1958-59, Plate LX, 6.

⁶ *Journal of the Asiatic Society*, Vol. I (1959), Plate V, 35.

⁷ Fig. 33 : 19.

⁸ Fig. 33 : 18.

⁹ Information from Prof. Govardhan Sharma, Allahabad University.

¹⁰ The British Museum has one green glass bead having white inlays and black eyes inlaid in it. This specimen was collected from Gorakhpur, Rudarpur or Kanauj by Mrs. Rivett Carnac in 1880. This is not included in her paper on Indian Beads published in the *Journal of Indian Art and Industry*.



Fig. 33
Indian Eye-beads of Glass

The antiquity of Eye Beads can be traced to a very remote past. In Anatolia¹ beads of this technique are first reported in the second half of the First Millenium B.C. and seem to continue there even upto the Roman-Byzantine Period. These are said to be exactly identical with the specimens found in Egypt and Palestine. It is surmised that the technique of manufacturing these beads or the specimens themselves may have migrated from these countries to Anatolia. Beck² has illustrated some stratified eye beads from Egypt attributed to XXIIIrd Dynasty. Examples from Palestine, which are comparable to the Indian examples in several respects, are illustrated by F. Neuberg³ and are attributed to *circa* 1000-800 B.C. Gustavus Eisen⁴ in a special study of these beads points out that "the earlier beads seen to have been built up of ready-made eyes so that very little or nothing of the matrix is visible"⁵ and taking this as the criterion for judging the Indian specimens it seems reasonable to say that the oldest eye bead from Taxila⁶ belonging to about 5th century B.C.; beads recovered from the lowest levels at Kosam and a bead from Rajghat in the Dikshit Collection fall in the category of the oldest examples of this technique from Egypt.

¹ H. H. Von der Osten, *The Alishar Huyuk*, 1930-32, (OIP) XXX, part iii, pp. 124-125 ; Fig. 130 ; and Chart opp. page 346.

² Beck, "The Classification and Nomenclature of Beads and Pendants", *Archaeologia*, LXXVII, p. 43. Fig. 34a ; and p. 64, Fig. 62.

³ Frederic Neuberg *Glass in Antiquity* (Trans. by R. J. Charleston, London, 1949), Plate XXXII, Fig. 112 e.

⁴ Gustavus Eisen, "The Characteristics of Eye Beads from the earliest times to the present", *American Journal of Archaeology*, Second Series, Vol. XX (1916), pp. 1-27 and Plate I, 1-65.

⁵ *Ibid.*, p. 18.

⁶ Beck, *Beads from Taxila*, Plate I, 14.

The earliest types of eye beads composed entirely of stratified blocks are known from Thebes which are attributed to XXII-XXIII Dynasties by Eisen¹. Petrie had similar specimens from Hyksos². Specimens migrating from Egypt are also known from *Tomba della Straniera* in Florence; and from Vetulonia in Italy³. These examples are later in date and are assigned to *circa* 9th-10th century B.C.

Stratified eye beads are also known from China⁴, where they are compared to First Millenium B.C. material from Egypt. The identity of beads from Qau in Egypt⁵ and those from the tombs of Lo Yang⁶ is so striking, as ascertained from spectro-chemical analyses, that there is hardly any doubt regarding the ancient specimens from Egypt having migrated to China. The beads from Qau belong to the second half of the First Millenium B.C. whereas those from the Lo Yang tombs in China are attributed to the Han Period (B.C. 206-220 A.D.). Presence of barium in appreciable quantity is a special feature of the Chinese specimens. From the study of this material Messrs. Seligman and Beck⁷ have concluded that though the great trans-Asiatic highway linking Europe and China was not properly organized till *circa* 2nd century B.C., it is certain that both countries were in cultural communication with each other prior to B.C. 300 or even earlier.

The availability of the material about stratified eye beads thus shows that they belong to two distinct chronological groups. The earlier of the two is attributable to the First Millenium B.C. to *circa* 800 B.C. and the second one is mainly represented by various centres ranging between 500 B.C. to the beginning of the Christian era or a little later. Beads in India, though not very accurately dated in all the cases, belong to the second group. In Europe much material is available for the second group. Certain beads are reported from Late Iron Age sites, dated about 500-400 B.C. These again seem to be fairly common to the Etruscan tombs in Italy; in Corsica and in the countries around the Mediterranean.

The problem regarding the authorship of these stratified eye beads in India cannot be settled very easily. The very fact that only a few specimens are known in India and the comparative abundance of similar material in countries outside India clearly shows that these tiny objects must have travelled to India from outside and that these products are not indigenous.

The late Mr. Horace C. Beck⁸ who examined the specimens from Taxila, commented that "these are virtually identical with beads found around the Mediterranean where they date from ninth to third century B.C. The semblance is so close that I am convinced that these beads were either actually made in the Mediterranean area, or at least by men who came from that area, or who had learnt how to make them from workmen who came from the Mediterranean countries". While citing the actual comparisons

¹ Eisen, *op. cit.*, Plate I, Fig. 40-41.

² Petrie, W. M. F., *Hyksos and Israelite Cities*, Plate XIX, 307; Eisen, *op. cit.*, Plate I, 42 (dated 766 B.C.).

³ Eisen, *op. cit.*, Plate I, 43.

⁴ Seligman and Beck, "Far Eastern Glass : Some Western Origins" in *Bulletin of the Museum of Far Eastern Antiquities*, No. 10 (1938), pp. 1-64 ; Plates I-XVII.

⁵ *Ibid.*, Plate IV, 1-2.

⁶ *Ibid.*, Plate IV, 3-4.

⁷ Seligman and Beck, "Far Eastern Glass : Some Western Origins" in *Bulletin of the Museum of Far Eastern Antiquities*, No. 10 (1938), p. 49.

⁸ Beck, *Beads from Taxila*, p. 24.

Beck compared some of the Taxila specimens with certain beads from Corsica, Cyprus and from the Etruscan tombs in Italy. Furtheron he added that there is a possibility that the Mediterranean beads came from Persia, but this is improbable as specimens from that country are very uncommon.

From a careful study of the Indian material, the author of this report is of the opinion that there is a greater possibility of these stratified eye beads being imported from Persia than from the comparable material obtained in the Mediterranean. From a small collection made by the author and from a scrutiny of the material preserved in the Etruscan Museum at Rome, he feels that amongst the Etruscan examples there are only a few which bear that characteristic vitreous polish which is seen on Indian specimens. Moreover during the Mauryan Period, to which many of the Indian specimens are attributed, India was constantly in touch with ancient Persia under the Achemenids, than was the Mediterranean. This matter is being brought home by the discovery of Asokan inscriptions in Kabul and Kandahar in Aramaic characters.¹ Since the date when Beck wrote about these specimens, more material from Persia is being brought to light and there is no reason to suppose that these stratified eye beads were less common in Persia as supposed by Beck. Since most of the material is confined to the Mauryan strata in India, it is safe to assume that it reached there through contacts with Persia. It is ubiquitous that these beads should occur in places like Taxila and Ujjain connected with the viceroyalty of Asoka and that these should have lingered on at the former place with the influx of foreigners in that area. With the spread of the Mauryan empire stray pieces infiltrated in the interior also, notably in the Gangetic Valley and in far off places like Kaundinyapura as was the case with the typical ceramics of the age viz., the NBP Ware.

SHELL BEADS

(Plate XXXIV, A, 1-9)

Besides a large number of bangle fragments, rings and other objects carved out of shell, described elsewhere in this report, shell was extensively used for beads also. They are fairly well distributed in the Mauryan and Satavahana layers, especially in the former. This is somewhat surprising since this does not agree with the results in respect of objects like bangles and rings. The proportion of the latter in the Satavahana layers is higher than the number of beads of that material.

There are four examples of the *Nerita* shell being used as a bead. Two specimens could be strung by rubbing the conus but in the other two examples sides were rubbed on a whetstone for effecting an aperture. There are two examples in which the bi-valve of a shell (Sukti) was used as a pendant by drilling a small hole at its apex. Short or long barrels seem to be the favourite shape in shell beads when they are carved out of the columnella of a conch-shell. There are as many as three examples, all from the Mauryan levels. The most noteworthy specimens, however, are three narrow pointed bud pendants, which have a "right-angled" perforation. They belong to the Satavahana Period. Bud-shaped pendants of this class are generally used as terminals at the lower end of the necklaces. Earlier these seem to be used as far back as 3rd century B.C. at Taxila in some carnelian imitations.²

¹ *Epi. Ind.*, Vol. XXXIV, pp. 1-8.

² Beck, *Beads from Taxila*, M.A.S.I., 65, Pl. IV, 13.

Plate XXXIV A illustrates the following select specimens:

1. *Nerita* shell bead, perforated by rubbing conus. No. 83, Trench C, Layer (4), Post-Satavahana.
2. *Nerita* shell bead, perforated by rubbing of the side. No. 157, Trench E, Layer (4), Post-Satavahana.
3. Bi-valve of a shell, *L. Punctata*, perforated at top. No. 460, Trench C, Layer (7), Mauryan.
4. Short barrel, circular bead of shell. No. 109, Trench B4, Layer (6), Mauryan.
5. Long barrel, circular bead of shell. No. 148, Trench E, Layer (4), Post-Satavahana.
6. Short barrel, circular bead of shell. No. 395, Trench Z, Layer (7), Mauryan.
7. Bud-shaped pendant of shell with L-perforation. No. 32, Trench B4, Layer (6), Satavahana.
8. Bud-shaped pendant of shell with L-perforation. No. 110, Trench C, Layer (5), Satavahana.
9. Bud-shaped pendant of shell with L-perforation. No. 162, Trench B, Layer (5), Satavahana.

GOLD BEADS

Two beads of this precious metal were encountered in Phases V-VI, belonging to Satavahana and post-Satavahana periods respectively. They do not represent any special types. The bead belonging to the Satavahana Period is spherical in shape, 10 mm. in diameter, and is hollow, perhaps once filled with some material like lac. The other one is a thick tablet circular bead, 0.7 cm. in diameter, 0.3 cm. in thickness, and is hollow like the previous specimen. The aperture is made by the insertion of a sharp instrument which leaves a cup-shaped depression at one end and a burred edge at the other.

(Plate XLVIII, B)

1. Spherical bead of gold, Satavahana. Trench B, Layer (5).
2. Tablet-shaped gold bead, Post-Satavahana. No. 72, Trench C, Layer (3).

COPPER BEADS

Copper as a material for beads is very rarely used at Kaundinyapura and the shapes do not exhibit any interesting varieties. The three specimens found belong to the Satavahana Period.

1. A very heavy rectangular bead wound in a roundish section. The perforation very small. No. 646, Trench B, Layer (5), Satavahana.
2. Annular bead of copper. No. 210, Trench C, Layer (5), Satavahana.
3. A short barrel circular bead of copper, very heavily entrusted and distorted. No. 209, Trench C, Layer (5), Satavahana.

TERRACOTTA BEADS

Twenty-eight terracotta beads were collected at Kaundinyapura through the excavations. As usual the beads are found entire being well baked. None of them have any dating value since they represent the most commonly noticed forms such as arecanut, spherical, ovoid, short barrel-circular and disc-shaped. The only exceptions are a Ghata-shaped bead [No. 90 from Layer (1)] and a square barrel [No. 170 from Layer (9)]. The number of arecanut-shaped beads is twelve. Spherical is the shape of seven beads while short barrel circular shaped beads amount to five specimens. A few amongst the beads are hand-made while a large majority is represented by wheel turned specimens, which generally show the striations very prominently on the surface. The hand-made beads are not uniformly shaped. For these and the short barrel circular beads, a black clay is used generally without any slip. For the rest of the examples red-ware predominates. The only two exceptional beads are:

No. 90 from B2 Layer (1), depth 3". A Ghata-shaped bead of black terracotta with a dark black slip. The shape is very common amongst ancient beads, the antiquity of which goes back to about 2nd century B. C. on other sites in India. The Kaundinyapura specimen associated with the Muslim layers is probably an example of ancient bead being re-used. (Plate XXI).

No. 170 from D4 Layer (9), depth 8'. A square barrel bead of red-ware. The clay is extremely well levigated and bears a fine clayee slip. The shape is common for the Mauryan strata where the specimen was found. Not illustrated.

The late Satavahana and the Satavahana levels yielded a few typical specimens of moulded and hand-made beads. The following select examples are illustrated :

(Plate XXXV, A. 1-7)

1. A spherical bead, 2.4 cms. in diameter, decorated with three broad bands in the centre and having lotus-shaped caps at ends, in high relief. Very well levigated reddish clay with a yellowish slip all over, very hard baked. No. 24, Trench B, Layer (2), Late Satavahana.

2. Terracotta bead having raised pimply surface all over. Light yellowish clay, very porous, and having a reddish slip. The 'pimples' were probably added by the *applique* technique. No. 1, Trench A, Layer (2), Post-Satavahana. Identical beads are known from Taxila, dated *circa* 300 B.C.¹; and from among the Satavahana beads from Kondapur.²

3. Cylinder-circular bead of terracotta, decorated with five bands of pellets, set within small pelleted zones, pressed from a mould. Light yellowish clay, with a clayee wash. No. 263, Trench C, Layer (5), Satavahana. Cf. Bead No. 24 above, simulating the same technique and probably from the workshop of the same potter.

4. Tiny cylinder circular bead grooved in the centre, simulating the vertebrae of a bird. Large perforation. Drab clay with a greyish slip. No. 280, Trench C, Layer (5), Satavahana. The bead could not be used as an ear-plug for a young girl.

¹ Cf. Marshall, *Taxila*, II, p. 461, Plate 136, g.

² Cf. Dikshit, *Some beads from Kondapur*, p. 23, Plate V, 245, 246, 249, 253.

BEADS

5. Crescent-shaped moulded toggle of terracotta; yellowish clay with identical slip all over. No. 123, Trench B, Layer (4), Satavahana. The shape is a very common one in beads of the Satavahana Period.

6. Convex barrel, hexagonal bead of terracotta. Dark black clay unslipped. Satavahana.

7. Cylinder circular toggle of terracotta decorated with six bands consisting of pellets and zones. Mould pressed. Reddish clay with yellowish slip all over. Satavahana (Pl. cf./XXXV 3) above.

(Plate XXXV, B. 1-6)

1. Black spherical bead. No. 96, B3 Layer (4), Satavahana.

2. Arecanut-shaped bead, roughly made. D4 Layer (1), Muslim.

3. Short-barrel, circular bead, black slipped. No. 152, B3 Layer (8), Mauryan.

4. Pear or Arecanut-shaped bead, with basal striations. No. 9, B3 Layer (9), Mauryan.

5. Ghata-shaped bead, black terracotta, with dark black slip. No. 90, B2 Layer (1), Muslim.

6. Mis-shaped arecanut bead, with flat base. No. 82, B3 Layer (1), Muslim.

B. TERRACOTTA OBJECTS

(Plates XXXVI-XXXVIII)

THE following terracotta objects deserve a special attention:

1. A terracotta head of a ram, length 10 cms., breadth 9 cms. showing the curved horns and the mouth in broad outline and well-delineated features. The fragment has a small vertical hole in the neck showing that it was movable and attached to the body by a suitable pivot. No. 164 from D4 Layer (2), depth 9 inches. Though found in the uppermost layers the workmanship shows that it was probably an old discarded object. On grounds of style the specimen presumably belongs to the Satavahana Period. Hard baked red clay with traces of red paint. (Pl. XXXVI, A)

2. Beautifully modelled terracotta head of a horse, length 5½ cms., showing the mane in deeply incised lines and the eyes effected by a hollow cylindrical tube. No. 104, Trench Z, Layer (8), Satavahana. Depth 3 metres. (Pl. XXXVI, B)

3. Portion of a water vessel, pale yellow in colour with identical slip and traces of a golden paint, representing a hollow irregular channel with the figure of an elephant with out-stretched *Shunda*. Length 4½" × 3" (Pl. XXXVI, C). The figure of the elephant is very gracefully made in *applique* and the object is identified as a Gajamukha Pranali (elephant-headed channel-spout). The exact shape of the vessel to which this spout was attached is not known. No. 103, Trench B3, Layer (6), depth 5'-3". Late Satavahana.

Makaramukha Pranalis are mentioned in Sanskrit literature like Harsha Charita¹ of Bana and elsewhere. An exactly similar object forming part of identical vessel, of the same fabric and with trace of gold paint was found in the same layer but the figure it bore is not well preserved. Traces of scales in *applique* indicate that it probably represented a fish. Spouts with representations of animals are quite common in the Gupta Period in North India, particularly at Rajghat and Ahichchhatra.

4. A small rectangular tablet (7 cms. × 6 cms. × 1½ cms.) of very hard baked clay with short herring-bone incisions all over the body. No. 238, D4, Layer (2), depth 2'.

This object is identified as a skin rubber or sole cleaner and is of common occurrence on several Indian sites. The antiquity of the skin rubber can be traced as far back as the Harappan times,² where barrel-shaped objects with herring-bone incisions were quite common; the type continued in the Gangetic valley as can be seen from the recently discovered specimens at Vaisali³ attributed to about 150 B.C.-100 A.D. The rectangular type originated in Taxila, where the Bhir Mound specimens are incised with triangular marks, while those from Sirkap⁴ have herring-bone patterns, as on the present specimen from Kaundinyapura. Mauryan specimens are known from Bhita⁵ and Tripuri.⁶ They are also known from Ujjain,⁷ Besnagar,⁸ Maheswara,⁹ and Sanchi.¹⁰ These are

¹ Kane, P. V., *The Harshacarita*, p. 6 (1965).

² Marshall, *M.I.C.*, pp. 467-68 and Pl. CXXXIII, 13-17.

³ Krishna Deva and V. K. Mishra, *Vaisali Excavations*, 1950, p. 58, Pl. XXB (Vaisali, 1962).

⁴ Marshall, *Taxila*, II, p. 425, Pl. 229, t, x, etc.

⁵ *A.S.I., A.R.*, 1911-12, Pl. XXIX, 18.

⁶ Dikshit, *Tripuri*—1952, p. 99, Pl. XXXVI.

⁷ Gwalior Archaeological Department, *Annual Report*, 1938-39, Pl. XIa, XXB.

⁸ *A.S.I., A.R.*, 1913-14, Pl. LX, 56; *Ibid.*, 1914-15, Pl. LIII, 5.

⁹ Sankalia *et. al.*, *op. cit.*, pp. 198-200; Fig. 103 = 2, 3, 19, 20.

¹⁰ *Catalogue of the Museum of Archaeology at Sanchi*, Pl. XX, C, 644.

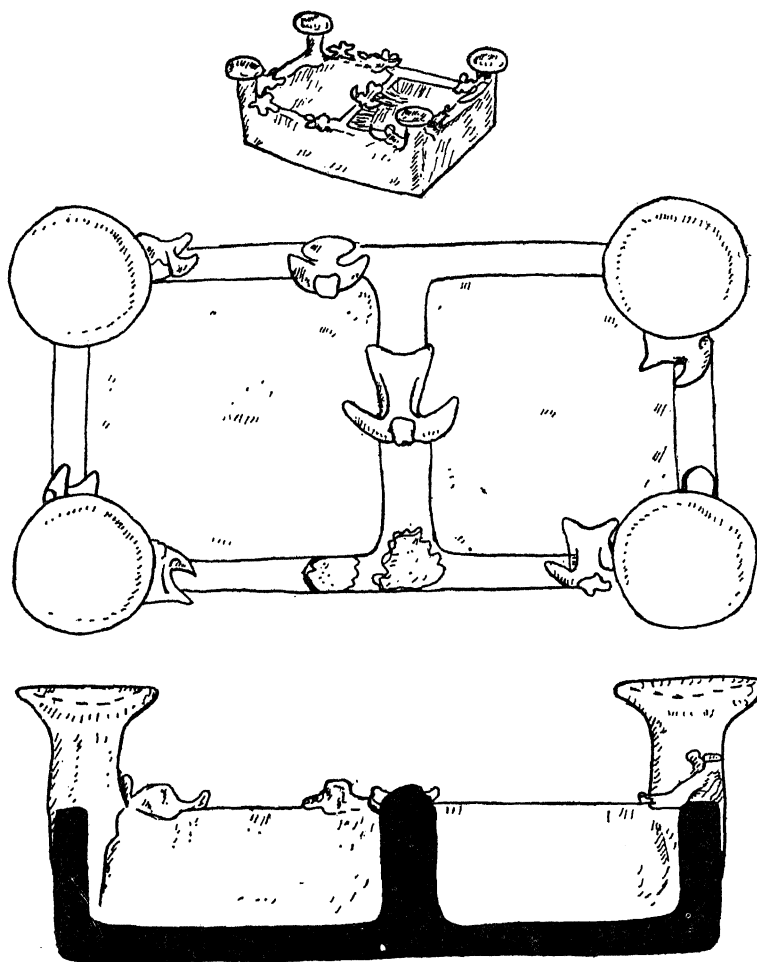


Fig. 34
Votive tank from Nuzi. (after Starr)

common enough in the Satavahana Period in the Deccan being found at Nasik,¹ Karad,² Nevasa³, Ter and Bahal.⁴ A fuller history of this object which was known by the name Kataka (Skt. Kritaka) is given in my report on the excavations at Tripuri.⁵ From the evidence at present available the terracotta skin rubbers seem to have gone out of fashion after the Satavahana Period in the Deccan, though metal substitutes of various forms and ornamental shapes become quite common in the Mughal and subsequent periods. Before the mass production of the common toilet soap the Vajaris were the only convenient article of use for personal hygiene. Two more specimens, one of them fragmentary and having a perforation for hanging was found in the Main Trench in Kdn-2. These were associated with Satavahana layers. (Plate XXXVIII, B. 1-3)

VOTIVE TANKS

(Plate XXXVIII, A)

Two interesting pieces of what may be described as portions of votive tanks were found. Both these were associated with post-Satavahana layers and generally confirm to the dating of the objects of this class found elsewhere in India.

Fragment 1 consists of the rim of a tank having a bird with out-stretched wings perched on its top. On the inner side of the wall the ladder is indicated by *applique*-work of finger tip decoration. The pottery is coarse yellowish in the core and has a reddish brown slip on the exterior. No. 51, Trench E, Layer (3), size 3" × 2" (Pl. XXXVIII, A-1).

Fragment 2 is a considerable portion of the rim of a votive tank, the inner wall of which is decorated with a ladder of three steps formed by wet lumps of clay. Crude brick-like pottery, ill-baked. No. 33, Trench C, Layer (2), size 4" × 3½" (Pl. XXXVIII, A-2).

Votive tanks were first known through the excavations at Taxila,⁶ where specimens from the Bhir Mound were attributable to 3rd-2nd century B.C. Numerous specimens are also known from the later site of Sirkap (1st B.C.-3rd A.D.). Their votive character was known from their association with a stupa where two examples were recorded from near the drum and a third one came from the debris nearby. The types show two main varieties (1) Circular Bowl with a number of lamps on the rim ; and (2) A rectangular tank with birds and lamps on the rim, aquatic animals on the floor, a small shrine at one end with a standing female figure (Mother Goddess ?) at or near the door ; a ladder sloping from the rim towards the shrine or shown in *applique* on the rim. Marshall has drawn attention to an observance in Bengal called Yama-pukur-brata observed by virgins where similar votive tanks are commonly used even to this day. A full distribution-list of these tanks as found in different excavations in India has been published⁷ in the Maheshwar Excavation Report and may not be repeated here. At Hastinapura⁸ about half a dozen specimens attributed to early 2nd century B.C. to late 3rd century A.D. (Period IV) were found, one of them showing a female musician.⁹ At Ahichchhatra¹⁰ these

¹ Sankalia and Deo, *Report on the Excavations at Nasik and Jorwe*, p. 101, Pl. XXIII, 6; Fig. 48: 3-4.

² *Explorations at Karad*, Pl. XIII, a.

³ Sankalia *et. al.*, *From History to Pre-History at Nevasa*, pp. 375-77, Fig. 172.

⁴ Information from Shri M. N. Deshpande.

⁵ Dikshit, M.G., *Tripuri—1952*, p. 99, Plate XXXVI.

⁶ Marshall, *Taxila*, II, p. 463ff, Pl. 136; cf. Ghosh in *Ancient India*, No. 4, p. 78; Pl. XVII; cf. also Gordon in *Antiquity*, XI, 1937, pp. 74-77.

⁷ Sankalia, Subbarao and Deo, *Excavations at Maheshwar and Navdatoli*, pp. 197-98; Fig. 104: 1-2.

⁸ Lal, B. B., *Excavations at Hastinapura etc.*, *Ancient India*, Nos. 10-11, p. 87; Pl. XLII, B.

⁹ *Ibid.*, Pl. LII, B.

¹⁰ V. S. Agrawala, *Terracottas from Ahichchhatra*, *Ancient India*, No. 4, p. 125.

TERRACOTTA OBJECTS

tanks were first introduced towards A.D. 100-200; they continue to be used there till about 350 A.D. At Rairh,¹ in former Jaipur State, no less than 4 different varieties of these tanks are met with, most of them with oval or circular forms and of a different type than the specimens from Taxila or Hastinapura. At Sambhar² a circular votive tank had the usual lamps at the rim as well as birds. In the centre stood a large figure of an elephant, found largely broken and around this animal at the base of the tank figures of a snake and a frog were depicted. At Arikamedu one unstratified object is identified³ as portion of a votive tank but the identification does not seem to be correct. At Nevasa⁴ three votive tanks belonging to Period V (2nd B.C. to 1st-2nd A.D.) were found. These confirm to the types found at Kaundinyapura. Ujjain is yet another site which has yielded similar tanks.⁵ One unstratified specimen having lamps at the rim of the tank is known from Nala Sopara and probably belongs to the early centuries of the Christian era.⁶ The Brahmapuri mound at Kolhapur is another site in the Deccan, where a complete votive tank has recently been discovered. The specimen illustrated on Plate LV.A⁷ is unstratified; but reveals identical characteristics like having aquatic animals at the base of the tank, a ladder for descending and a figurine in the centre. The circular edge of the tank has the usual figures of flying birds and lamps alternately arranged on the rim. It may belong to the post-Satavahana Period. A specimen from Ter (Plate LV.B) in the Lamture Collection possibly belongs to the post-Satavahana Period. The latest date is provided by three specimens attributed to the Gupta Period from the excavations at Bhita⁸ and the subject is somewhat unusual. One of them, squarish in shape depicts seven figurines (Sapta-matrikas?) around a short table and a portal or house for them at one end. Another specimen is said to be similar to this; and the third one confirms to the usual type in having lamps at the rim of the tank and aquatic animals at the base. Some examples are also known from Nagarjunikonda but are not published upto now. In view of the wide distribution of these 'tanks' it is undoubted that they were connected with a ritual.

The number of votive tanks found at Taxila is not more than 15 including the fragments. Four specimens were found near and alongside the base of a stupa in the Parthian levels. Marshall⁹ and others have naturally taken this to be a cult object reaching India through the Sakas and the Parthians. At this stage it is not possible to trace the validity of this statement because though the idea is essentially the same, the form (particularly Marshall's Type A) and the variations are many. The cult object is seen in the ancient Iranian site of Nuzi in Persia.¹⁰ The form which has specific parallels with Satavahana specimens in the Deccan is represented by *Nuzi*, Plate 113 B, B₁, B₂. The tank is rectangular in shape with four large earthen lamps on tall stands at the four corners and the winged birds perching on the rim. The tank is divided into two compartments. It is not stated whether aquatic animals as found in the Indian specimens were seen in the Nuzi samples. But the types are distinct and seem to be closely related. (See Fig. 34).

¹ Puri, *Excavations at Rairh*, p. 44; Pl. XXII, 1, 3, 4, 5, etc.

² Sahni, D. R., *Archaeological Remains and Excavations at Sambhar* (Jaipur), pp. 34-35; Pl. XII, m.

³ *Ancient India*, No. 2, p. 103; Pl. XXXV, 5.

⁴ Sankalia *et. al.*, *op. cit.*, p. 381; Fig. 174.

⁵ *Indian Archaeology, A Review for 1956-57*, p. 28; Pl. XXXV, B, 1-3. See also *Ibid.*, 1957-58, p. 36 (from Period III. 1st century A.D.).

⁶ Specimen in the Deccan College, Poona.

⁷ Photograph by the courtesy of Shri S. S. Shinde of the Kolhapur Museum.

⁸ *A.S.I., A.R.*, 1911-12, Pl. XXV, 47, 48.

⁹ Marshall, *Taxila*, Vol. II, p. 463.

¹⁰ R. F. Starr, *Nuzi*, Vol. I, pp. 438-39, Vol. II, Pl. 113 A, B, 114 E, 115 A.

ROOF-TILES

A number of fragmentary roof-tiles have been found. These are more abundant in the Muslim layers while only two fragmentary specimens were associated with the Late Satavahana and Satavahana layers. In these two types can be distinguished.

Type 1 represents the normal variety, rectangular in shape with grooves on the upper surface and having two holes along the breadth. A deep single groove on the length-wise side and a corresponding flange on the opposite end underneath are the main features. These tiles measured about 7 to 10 inches in length and about 6 to 7 inches in breadth and these were fixed by two nails into the wooden rafters below.

Tiles of Type 1 are fairly abundant in Maharashtra, Central India and on the east coast.

LIST OF SITES

Maharashtra

1. Kolhapur .. Sankalia-Dikshit, *Excavations at Brahmapuri*, Kolhapur, p. 138, Pl. XX, B.
2. Nasik .. Sankalia-Deo, *Excavations at Nasik*, p. 106, Pl. XIV, 7.
3. Nevasa .. Sankalia-Deo and others, *From History to Pre-History at Nevasa*, p. 398.
4. Karad .. *Explorations at Karad*, p. 23; Pl. X, A.
5. Kundal .. Information from Shri M. R. Inamdar.
6. Bhujinj .. Information from Shri M. R. Inamdar.
7. Paithan .. 1966 Excavations.
8. Ter .. 1967 Excavations.

Central India

9. Maheshwar .. Sankalia, Subbarao, Deo. *Excavations at Maheshwar and Navdatoli*, p. 205.
10. Sanchi .. Marshall, Foucher, etc., *Monuments at Sanchi*, Pl. CXI (a).
11. Rairh .. Puri, *Excavations at Rairh*, Pl. 7.
12. Bairat .. A.S.I., A.R., 1935-36, p. 85.

Eastern India

13. Bhita .. A.S.I., A.R., 1911-12, pp. 41, 85, Pls. XXIX-XXX.
14. Basarh .. A.S.I., A.R., 1903-04, Pl. XXXVIII.
15. Bangad .. Goswami, *Excavations at Bangad*, p. 35.

Type 2 is represented by many fragmentary specimens at Kaundinyapura which are exact proto-types of the Satavahana tiles of Type 1 above. The main difference however lies in the largeness of the size, which extends to about 8 inches or more in the breadth and probably in the length also. The upper grooves tend to be shallower

and leave the surface almost flat. The predominant feature again is a narrow U-shaped or crescentic depression in between or near the holes which is absent in Type 1 described above.

The exact extent of tiles belonging to Type 2 is not known. But from the distribution-list of Type 1 tiles, it is apparent that they were fairly well distributed both in point of time and space. The excavations at Bhita indicate that Type 1 tiles were current at least till the Gupta Period at that site. They are encountered in Maurya, Kushana and Gupta layers. Tiles of the Gupta Period at Kumrahar, Patna are very wide in span and are provided with one hole only.

Khapur, Kavelu, Kaula are some of the names by which tiles are known in general in many parts of India and there does not seem to be any suitable name for it in the Sanskrit literature.¹ The normal form current now in India seems to have the shape of half cylinders which seems to be a late-comer in the field. The remarks of Thevenot,² an Italian traveller, who visited the Mughal Court in India in 1666-1667 A.D. deserve to be cited here. Regarding the houses at Surat he says, "The Houses are covered with tiles, made half round, $\frac{1}{2}$ an inch thick and ill-burnt; so that they look still white when they are used and do not last; and it is for that reason that the Bricklayers lay them doubles and make them to keep whole. Canes which they call Bombous serve for Laths to fasten the tiles to."

BRICK FINIAL (Plate XXXVIII, C)

Associated with the Satavahana layers was found a fragmentary portion of a brick finial. It is made of very coarse brick without any slip. It is flat on the underside. On the upper margin runs a broad border, consisting of triangular or a zigzag pattern effected by deep incisions. The central portion tapers inwards like a pyramid, the edges of which are again decorated with triangular designs.

This object, it is believed, forms the portion of a decorative finial, the like of which was fixed on house-tops, as seen on some Bharhut sculptures.³

Finials answering to this description have actually been recovered from the excavations at the following sites: Arikamedu, Bangad, Bhita, Kasia, Kondapur, Ramatirtham, Rairh, Sambhar and Ujjain.⁴

No. 160, Trench E, Layer (4), Satavahana (Pl. XXXVIII, C).

SPINDLE WHORLS (Plate XXIV)

The excavations brought to light a number of spindle whorls, mainly from Layers 3-7. The usual practice was to shape a potsherd into a circular piece by rubbing the sides and boring a hole through its centre. In all about 27 pieces were recovered chiefly from the Mauryan stratum. They were absent from the preceding phases, save one specimen which came from Layer (10) in Trench C. Occasionally whorls were also made of terracotta. Select examples are illustrated in Plate XXIV.

¹ See however reference to a tiled house. Kavelukachchhana in *Lekha-Paddhati*, a composition of about 13th century A.D. in Gujarat. See *Lekha-Paddhati*, (G.O.S. 19), 35, 36, 37, 47.

² *Indian Travels of Thevenot and Careri* (Ed. Sen), New Delhi, 1949, p. 22.

³ Cf. Barua, *Bharhut*, III, Pl. LXXIX; Fig. 105.

⁴ See references cited in Sankalia-Dikshit, *Excavations at Kolhapur*, pp. 142-43.

CRUCIBLES

(Plate LIV, B. 1-2)

Layer (15), which corresponds to Period I at the site yielded a number of crucible fragments in association with some copper slag and charred pieces of timber. It was evident that copper was being smelted in the area but corroborative proof of additional equipment such as implements required in the operation were wanting. This may be due to the fact that the space available for excavation in the lowermost levels of Square B3 was very small, but the incidence of the crucibles in a very large quantity was nevertheless very striking. In all 17 fragments were recovered of which only two were large enough to give an idea of the shape of the crucibles. These were in two different sizes, the larger one measured about 8 cms. in height while the shorter one was about 6 cms. high. Both these have tapering torpedo-shaped bottoms and thick walls about 7 cms. in breadth. Both the crucibles are bottom heavy. The inner diameter of the large crucible is 3.5 cms. while the smaller one measures 2.5 cms. across. These are made of a very coarse clay mixed with charcoal. Husks and small chalcedony pebbles are added in some fragments. The inner surface of the curved fragments is uniformly rough in texture but the outer side has a smooth glossy appearance caused by repeated heating which is characteristic of such vessels. In one rim fragment there are traces of reddish pigment resembling reduced copper while green lumps of copper-oxide were still sticking in the interior of several fragments. These coupled with the proximity of some timbers showed beyond doubt that these were traces of a coppersmith's left over.

The fragments of the crucibles were sent to Prof. D. C. Khare, B.Sc., B.Sc. (Tech.). Government Polytechnic, Nagpur, for identification of the mineral contents. No chemical analyses was possible as the quantity was very small but the following tests were carried out for the identification of the material.

He reports: "the particles were treated with concentrated Nitric Acid and the solution thus obtained was diluted with distilled water. On addition of a Barium Chloride Re-agent solution, a white precipitate soluble in Ammonium Hydroxide was obtained. This confirmed the presence of silver in the crucible. The particles were further tested for copper in the following way. Extract of the blue material was obtained in Hydrochloric acid. Treatment with excess of Ammonium Hydroxide gave a blue coloured solution, indicating the presence of copper. But the tint obtained was very faint and thus showed that the quantity of copper in the specimen was negligibly small. The crucibles from Kaundinyapura, thus examined, showed that they were mainly used for smelting silver containing some impurities of copper in small quantities."

C. METAL OBJECTS

IRON OBJECTS

(Plate XLIII, 1-21; Fig. 35:1-21)

QUITE a large number of iron objects were found in the excavation. Many of them were non-descript fragments and shapeless masses with very heavy corrosion which rendered the identification of the objects difficult. A few selected examples are illustrated here (Plates XLIII and XLIV). Of special interest are a few arrow-heads, a pair of tongs (Pl. XLIII, 8) and a pin used in a rotary quern (Pl. XLIII, 16). Daggers, swords and a chisel (Pl. XLIV) also deserve mention.

Arrow-heads.—Thirteen arrow-heads fall into four distinct classes. Class 1 has a triangular leaf-shaped blade with barbs at ends and a solid tang. Class 2 has a long tapering leaf-shaped blade with a socketed tang and a mid-rib on the blade which extends about half the length of the height. Class 3 has a fish-shaped profile for the blade and a socketed tang. Class 4 is represented by a large number of specimens which have very short tennon-like tangs and the blades are substantially thick and have a square or diamond-shaped cross-section. Whether the last mentioned class represents ordinary nails used for door-fittings etc., could not be determined and if actually so these belong to domestic furniture of which no substantial evidence was forthcoming in the excavation.

1. A small arrow-head with a flat triangular blade and a solid tang, heavily rusted. One portion of the blade missing. Length 6·8 cms.; Breadth 2·3 cms.; No. 236, B3 Layer (15); Megalithic.

2. Similar to above. Trench Z, Layer (8). Class 1. Mauryan ? Length 5·9 cms.; Breadth 3·2 cms.

3. Similar to above but with a flat blade having a slightly raised mid-rib. No. 202, B3 Layer (7); Length 5·2 cms.; Breadth 2·8 cms.; Post-Mauryan. Class I.

4. A long leaf-shaped arrow-head with a barbed blade and a socketed tang with a mid-rib on the blade extending up to the middle. One barb broken. Class 2. Length 8·8 cms.; Breadth 3·2 cms.; B3 Layer (14); Megalithic.

5. A long arrow-head with a fish-shaped profile with a socketed tang. No. 218, B3 Layer (13); Pre-Mauryan; Length 10½ cms.; Breadth 3·2 cms.

6. Portion of a chisel with a splayed blade having a curved edge. Flat lenticular section. Length 11 cms.; Breadth 3·8 cms.; No. 207, B3 Layer (11); Pre-Mauryan.

7. Portion of the lower end of a crow-bar having a sharp cutting edge. Heavily rusted. From the patination and the flakes it appears that it was made by beating long iron strips. Length 16 cms.; B3, Layer (10); Pre-Mauryan.

8. Fragmentary portion of a pair of tongs made from a single piece of iron with a diamond-shaped tip and doubled top, one prong broken. No. 230, B3, Layer (15); Length 13 cms.; Megalithic.

9. Non-descript iron object, curved at one end with the longer section flattened and lenticular in section. The curved portion is thick and circular in section. An exactly identical object (No. 220) from Layer (12) is recorded. Both the objects are unfortunately

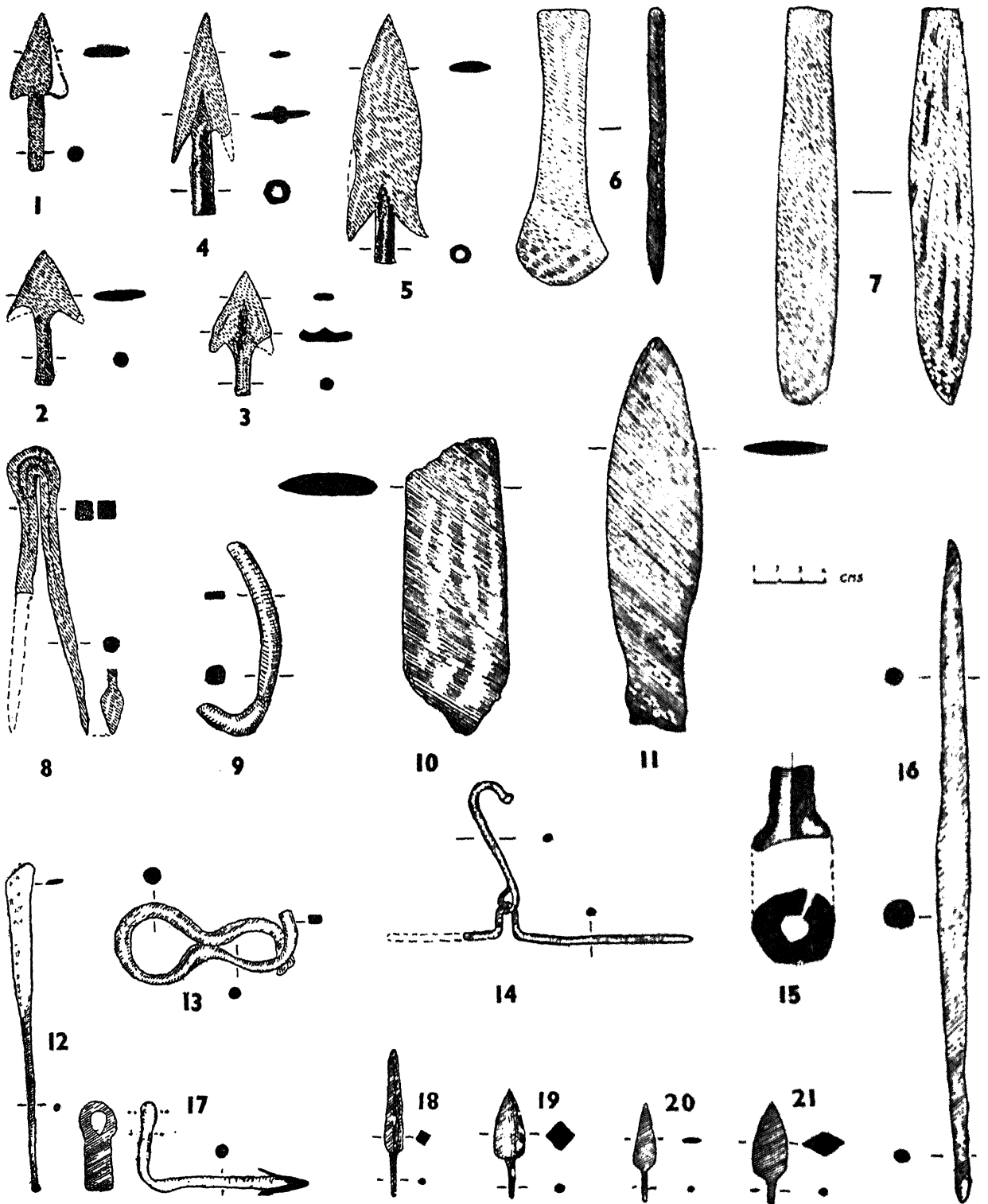


Fig. 35
Iron objects 1-21

METAL OBJECTS

very fragmentarily preserved. If they represent horse-bits or portions of a pair of stirrups, their association with megalithic layers would assume some significance. Horse bits and megalithic pottery is seen in the excavations at Sanur,¹ and in the cairn circles at Benkal.

10. Portion of the blade of a sword, lenticular in section. Length 11·8 cms.; Breadth 4·4 cms.; No. 20, B3 Layer (10); Pre-Mauryan.

11. A long leaf-shaped blade of a javelin (?), lenticular in section. Length 16 cms.; Breadth 4 cms.; B3 Layer (3); Muslim.

12. A long iron *Narani* or nail-pairer, having a sharp triangular blade with a flattish lenticular section having a long handle, circular in section. Nail-pairers of this type were commonly used till recently in the villages. These are generally carried by barbers. The specimen illustrated belongs to the Muslim Period and is of no great antiquity. No. 81, B3 Layer (2); Length 14·2 cms.; Breadth 18·3 cms. For copper nail-pairers from Hastinapura (see Lal, *op. cit.*, *Ancient India*, Nos. 10-11; Fig. 30.: 5-6).

13. Portion of a link of a chain with 8-shaped profile. Maximum length 8·4 cms.; B3 Layer (2); Muslim Period.

14. Portion of a balance beam (?) with a suspension ring. Portion of the horizontal rod broken. B3 Layer (2); Muslim Period; Length 9 cms.; Height of ring 6 cms.

15. A short spout-like iron object made by curving a thick iron plate, broad at the base and having a tapering nozzle. B3 Layer (2); Muslim Period.

16. A long rod with tapering ends and slight bulge in the middle, circular in cross-section. This object is believed to be the central pin used in a rotary quern and is still common in Kaundiynapura. B3 Layer (2), No. 60; Length 28 cms.; Muslim Period. (Pl. XLVIII, 2).

17. An L-shaped bolt of a lock, having four flexible springs at the lateral end. The upper end which is flattened has a small hole for insertion of the handle of the lock-case. Length 7·4 cms.; No. 61, B3 Layer (2); Muslim Period. (Pl. XLIII, 16).

This is a very interesting piece of a lock of the old spring-and-push type used in ancient India. The mechanism with which it worked was very simple. The four flexible springs at the end of the bolt passed through a small hole made in the lock-case after getting constricted while inserting and got splayed again when fitted into the lock-case. The latter had a suitable hole in the rear plate for the insertion of the bolt; and a similar one on the opposite end through which the key was inserted for the opening of the lock. The key operated the collapsing of the flexible springs and enabled the bolt to be taken out of the lock-case. The lock-case had a long handle-like attachment which held the bolt into position by passing through the hole in the upper portion of the bolt.

Similar locks have previously been found in the monasteries at Nalanda² and in Sanchi.³ Eight specimens were recovered in the monastic cells at Sirpur⁴ in Madhya

¹ N. R. Banerjee and K. V. Soundara Rajan, "Sanur, a megalithic site in District Chingleput", *Ancient India*, No. 15 (1959), p. 37; Fig. 11 : 26.

² Specimens (unpublished) in the Nalanda Museum.

³ Hamid, *A Catalogue of Antiquities in the Sanchi Museum*, p. 47 (Calcutta, 1922), Pl. XVIII, C 127, C 128.

⁴ The specimens from Sirpur are not yet published.

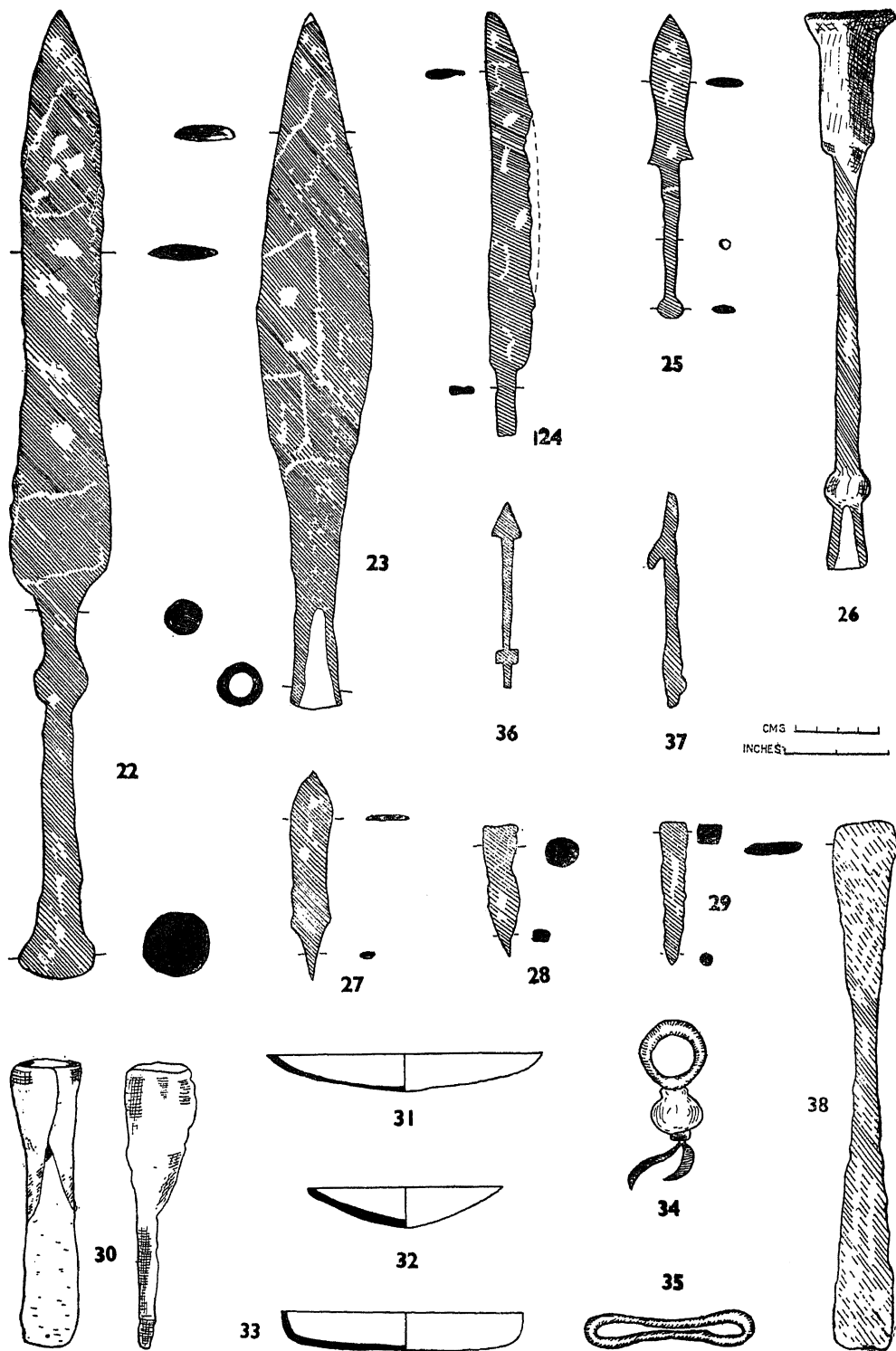


Fig. 36
Iron objects 22-38

Pradesh in the excavations conducted by the author under the auspices of the Government of Madhya Pradesh in 1958-59. The lock-cases found there were of two different shapes being (i) circular and (ii) rectangular in cross-section. Each lock-case had a long bar-like attachment at the upper edge and in one case the bolt was found inside it. Several keys for operating such locks were also discovered.

The locks of the spring-and-push type have a very remote antiquity outside India. These were very common in the Roman world, there being several specimens of it in the Museum at Pompeii.¹ A similar lock was also discovered by Dr. R. E. M. Wheeler in his excavations at Verulamium.² Since all the specimens so far recorded in India do not show a very high antiquity it is undoubted that the type travelled to India from the Roman contacts it had with the West in the Satavahana Period. The specimens from Sanchi and Nalanda are not precisely dated but from the general nature of the antiquities discovered there, their antiquity cannot be pushed back beyond 4th-5th century A.D. while the excavated specimens at Sirpur are dated *circa* 7th century A.D. In this connection it is important to observe that Nicolas Manucci,³ the Italian traveller who came to India during the middle of the 17th century mentions such locks being used in the Mughal court where he styles them as Turkish. Manucci illustrates a specimen of the bolt which has a pair of flexible springs instead of a single one usually found in the Indian specimens.

Such locks were manufactured by the local lock-smiths in almost every village before the machine-made locks were introduced. The writer procured a specimen made by a smith in Sirpur and from the information elicited from the various persons it was known that the type was prevalent in many parts of India, particularly in Rajasthan, Madhya Pradesh, East Bengal and parts of Bastar. At Kamlapur,⁴ 14 miles from Bhanpura, in the Chambal Valley, the writer also discovered a stone panel in which the door was displayed with an identical type of lock. The panel belonged to the Mediaeval period and is as yet unpublished.

The keys for such locks were also of a special type, and were designed to suit the position of the flexible springs and appropriate holes in the lock-plate. Keys of these locks are known from Sirpur and several specimens in Taxila⁵ are dated about 1st-2nd century A.D. being from Sirkap. The foreign import of the locks is quite apparent from the examples cited above. Though stapless, bolts, door-pins, monkey-heads, latches etc. are known through references to these objects, a real locking device, as indicated by above examples does not seem to have existed in India till at least the Mauryan Period. It is well known that Megasthenes in his *Fragments* has mentioned that the Indians do not find it necessary to lock their houses, which shows that such a device was little cared for in ancient India. The present example from Kaundinyapura belongs to the Muslim Period and shows a long continuity of its use.

Nos. 18-21 show different types of nails (or arrow-heads ?) characterised by a small shaft or a tennon at the base and small bud-like projections, which are either square or

¹ From personal inspection in the Museum at Pompeii.

² R. E. M. and Theresa Wheeler, *Verulamium*, p. 219, Pl. LXV A 15-16. The original specimens found there are preserved in the local site museum at St. Albans. cf. Petrie, *Tools and Weapons*, pp. 55-60, Pl. LXXII, 205-10 and Pl. LXXVI.

³ Manucci, *Storia do Mogor* (tr. by Irvine), Vol. II, p. 99.

⁴ The Kamlapur specimen now preserved outside the village probably formed a portion of the rear wall of Mediaeval temple nearby.

⁵ Marshall, *Taxila*, II, p. 599, Iron Pl. 164; Nos. 48-52 and Pl. 184 O; Nos. 3-6; and copper Pl. 176; Nos. 353-356.

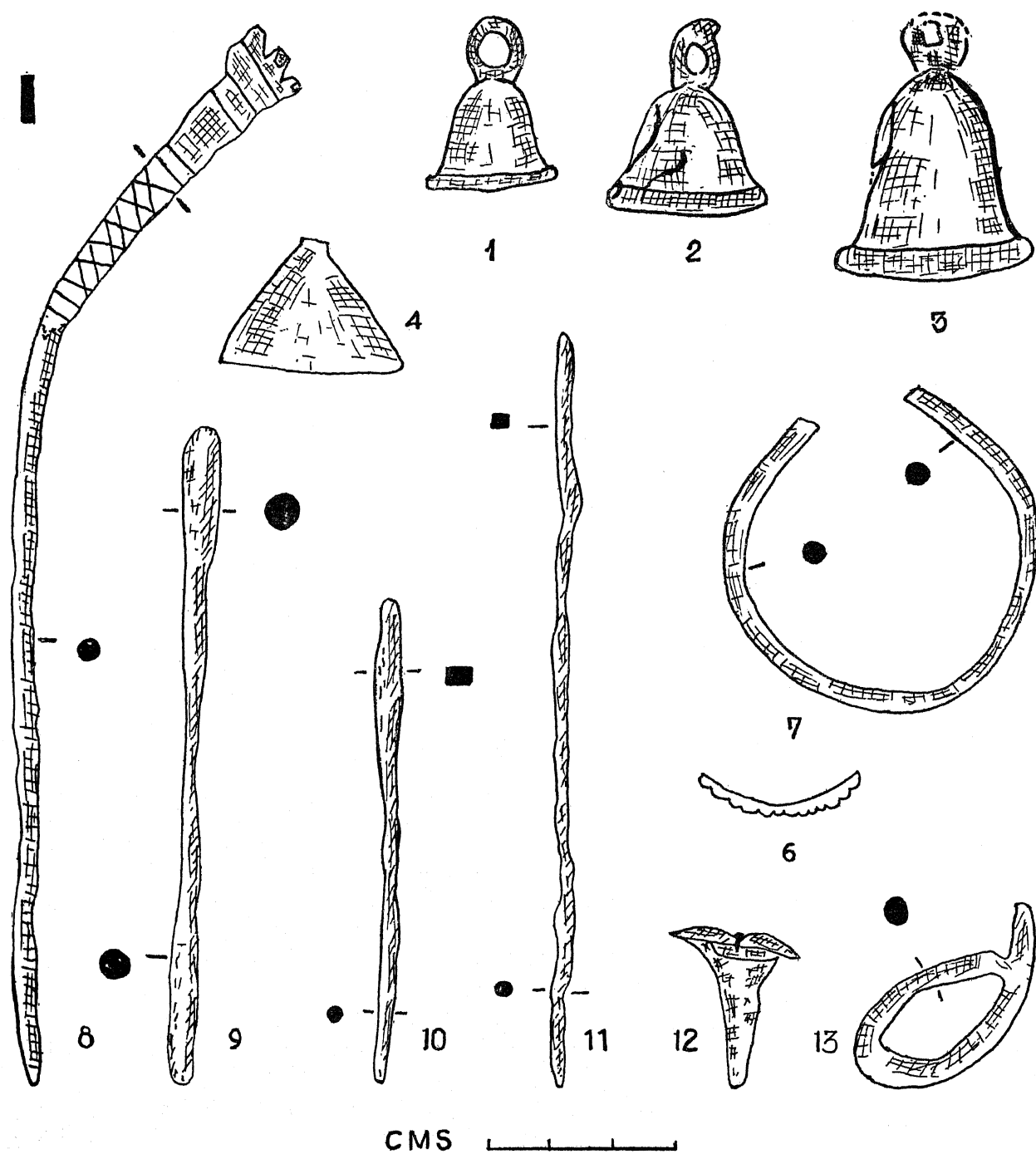


Fig. 37
Copper objects 1-13

METAL OBJECTS

diamond shaped in section. The exact use of these nails (?) is uncertain but from the large number encountered in the excavation these appear to be meant for use as door decoration with spiked heads. These are associated with Layers 1-2 and belong to the Muslim period at the site. No. 18 has a long projection, while the three others are comparatively short in length.

IRON OBJECTS

(Fig. 36)

No. 22. A long end of Javelin, about $15\frac{1}{2}$ " long, having a sharp-pointed broad leaf-shaped blade, about 9" in length; solid tennon with a splayed bottom and having a solid ribbing in the middle. This object along with two others (Nos. 23, 24 and 38 etc.) were found at the depth of about in the Post-Mauryan layers in the main trench at the site Kdn-2.

No. 23 is another leaf-shaped Javelin, $11\frac{1}{2}$ " in length, and having a socketed tennon, found in association with No. 22 above, Post-Mauryan period.

No. 24 is the blade of a knife, about 7" in length, with a straight side and a curvilinear cutting edge, the latter being slightly broken by use; found along with Nos. 22 and 23 above, Post-Mauryan.

No. 25 is a similar Javelin tip with a fish-shaped profile having a splayed base and a long round tennon with a flattish circular appendage at the end. The latter was apparently meant for fitting it tightly into a long wooden pole. The circular end was required to prevent the iron portion from slipping. Found in Trench 'B' in Layer (10), Post-Mauryan.

No. 26. This is a handle of a Chauri (or more probably the base of a torch called Chudi). This is characterised by a splayed cup-shaped receptacle at the top, a long slender bar as a handle, with a bulge at the base. In ancient times such torches were very much in vogue and formed the necessary equipment of the household for lighting and specially used for showing the way through the streets at night. The torch-bearer was called Mashalchi.

If the implements Nos. 22, 23 and 25 should be regarded to as the belongings of a warrior, the torch would also form a part of this equipment.

No. 27 is a small leaf-shaped blade of a Javelin, comparatively flat in profile, and having a tapering base. It measures about 3" in length and was probably used as a dagger. Unstratified, but probably belonging to the Post-Mauryan period.

No. 28 is a solid iron chisel, about 2" in length, and is characterised by heavy circular stem and a pointed end below it. This is associated with the Post-Mauryan layers at Kaundinyapura.

No. 29 is a similar chisel, about $2\frac{1}{2}$ " in length, and has a square section at the top and sharp-pointed end below. Both these tools were found close together below the Satavahana pavement in 'A' and are a little earlier than the Satavahana Period. It would appear that both the types of chisels were in use, having either square or rectangular cross-sections.

No. 30. This is a hoe-shaped object, about 4-80" in length. It is prepared by folding over two ends of the iron strip which forms the socket for the implement. The lower portion of the implement is flat and rectangular in cross-section. The blade at the base is obliquely cut and rectangular in shape. This hoe is assigned to the Post-Satavahana Period and is an important evidence about the agricultural equipment in Ancient India. Similar hoe is reported from Hastinapura¹. This has a round splayed base and the holders are of folded straps. It is attributed to about 11th century A.D.

Nos. 31-33 are varieties of pans of iron, the exact use of each is not known. Their diameters range from 3" to 5" and their short height render it possible that they were intended as frying pans for *chapatis* etc. No. 33 may be a small receptacle. All these objects were associated with the Satavahana Period at Kaundinyapura.

No. 34 is an iron ring with a onion-shaped knob at one end. The two ends of the ring passes through this knob and are left loose. These were intended for fitting them into a swing, or for suspending some heavy object from it. The wooden attachment below the onion-knob has disappeared. This type of ring is known as *Halka* in Marathi which it probably represents. This object was found in the Muslim layers. B3, Layer (3), Muslim.

No. 35 is a figure of eight-shaped link of iron. It measures about 2-3" and belongs to Muslim period.

No. 36 is a small arrow-head, with a triangular blade, a long bar-like handle with a rectangular projection for tying. B3, Layer (6), Satavahana.

No. 37 is a barbed arrow-head, the occurrence of which is somewhat rare in India. It has a sharp triangular blade, with a long tapering rod, about 3½" in length, with an arrangement for tying. It was probably intended for hunting fish by throwing in the water. The stem is solid and very sturdy. B3, Layer (3), Muslim.

No. 38 is a round long flattish strip of iron with a lenticular profile and is twisted to shape by 3 turns. The exact use of this equipment is not known. Associated with the Satavahana stratum.

COPPER OBJECTS

(Plate XLI, Fig. 37)

A number of copper objects were found in the excavation. Plate XLI illustrates some of the important copper objects:

(1) Copper bell of miniature size, about 2 cms. wide at the base of the cup, with a broken ring loop; height 3½ cms. No. 226, Kdn-2, Trench E, Layer (5), Post-Mauryan.

(2) Similar to above No. 410, Trench E, Layer (5), Post-Mauryan.

(3) Complete specimen of a bell with its wall slightly damaged, diameter at base 2 cms., height 4 cms. The tongue is made of iron and attached to the body with a hook. No. 259, Trench Z, Layer (7), Mauryan.

These bells (together with two other later specimens not illustrated) were probably sewn at the end of garments and are described as *Kshudra Kinkinis* in Sanskrit literature.

¹ Lal, B. B., Excavations at Hastinapura, *Ancient India*, Nos. 10-11, Fig. 31: 17, 18.

(4) Copper cymbal, conical in shape, diameter at base 3 cms. Has a large perforation at the top for the passing of a thick string. The inner edge of the cup is slightly splayed with use. Cymbals like the present specimen are common in Indian sculpture. Miniature examples are generally designated as Manjari as against the larger ones known as Jhanjha. No. 121, Trench B, Layer (4), Satavahana.

(5) Copper boss. Convex circular, diameter 4 cms. with a flat strip-like hook at the back, fitted to some wooden object. No. 217, Trench C, Layer (5), Satavahana. (Pl. XLI, 5)

(6) Copper pin about 18 cms. in length, circular in section with a flattened end turned into three hood-like prongs. Exact use uncertain. No. 59, Trench C, Layer (4), Satavahana. (Pl. XLI, 6; Fig. 37:8)

(7) Copper bangle for a child, diameter 5 cms. made from a strong wire, circular in section. No. 101, Trench C, Layer (5), Satavahana. (Pl. XLI, 13)

(8) Hook-shaped object turned like the handle of a pair of scissors. No. 216, Trench C, Layer (5), Satavahana. (Pl. XLI, 11; Fig. 37:13)

Though the identification of the object is certain, the use of copper for it is very unusual. An iron specimen worked with two separate fingers is known from Taxila¹ and Marshall² observes that there is no evidence of the tool having been independently evolved in India.

The present object is assigned to the Satavahana Period. In this context we might incidentally refer to a tradition recorded in the Kamasutra of Vatsyayana, 2, 7, 28, which states that a Satavahana king killed one Malayavati by means of a *Kartari*. *Kartari* is the name by which scissors are known in Sanskrit literature, but in the above citation Yasodhara, the commentator of Vatsyayana specifically states that *Kartari* was a kind of embrace and thus had nothing to do with scissors. However it only shows that the object was known during the Satavahana Period. Whether scissors were known in India prior to 1st century A.D. one cannot say with certainty, but the present specimen appears to be one of the earliest fragments known so far.

(9) Antimony rod, 10.5 cms. in length, having clubbed ends on either sides. No. 147, Trench B, Layer (5), Satavahana. (Pl. XLI, 7; Fig. 37:9)

(10) Antimony rod, badly smashed, approximately 10 cms. long, with one of the ends tapering and the other clubbed or bulging. No. 417, Trench C, Layer (5), Satavahana.

(11) Antimony rod, length 14 cms., made from a stout wire with one of the ends clubbed or thickened. No. 318, Trench B, Layer (6), Mauryan. (Pl. XLI, 9)

Copper antimony rods were known in Ancient India as *Salaka*; and their use was permitted even for the monks by the Buddha.³ Specimens are commonly known from the Harappa Culture sites.⁴ According to Marshall copper antimony rods with clubbed ends occur in the Saka Parthian city of Sirkap, simulating Roman proto-types and continue at Taxila till later times.⁵ The evidence from other sites in India show an

¹ Marshall, *Taxila*, II, p. 555, Plate 167, No. 135.

² *Ibid.*, p. 555.

³ See *Mahavagga*, VI, 11.

⁴ Cf. Marshall, *M.I.C.*, II, pp. 504-05, Pl. CXLIII.

⁵ Marshall, *Taxila*, II, p. 585; Plate 173, a-e.

earlier origin for such kohl-sticks and the type continues to be used for a considerable length of time. Clubbed kohl-sticks at Hastinapura are dated between the mid-levels of Phases III and IV assignable to *circa* 300 B.C. to 3rd century A.D.¹ At Kumrahar, Patna,² similar Salakas have a very long survival. They are first encountered in *circa* 150 B.C. layers and continue even up to 600 A.D. These however seem to be more common to Phase II, assignable to 150 B.C.-100 A.D. At Rairh³ clubbed antimony rods are dated between B.C.300-200 A.D. At Vaishali⁴ clubbed rods are associated with Period IV (300-600 A.D.).

No clubbed antimony rods were found at Tripuri, though specimens of the tapering variety were quite common.⁵ At Maheshwar specimens described as thin in the middle and having bulbous ends were associated with Period IV assignable to *circa* 400 B.C.-100 B.C.⁶ The picture presented by the specimens in the region south of the Narmada river is in no way different from the North Indian analogues. At Nevasa such kohlsticks are found in Period IV (150 B.C.-50 B.C.) and the type continues till Period VI (1400-1700 A.D.).⁷ Specimens at Nasik range between 200 B.C.-50 A.D. corresponding Period III.⁸ They are also known from Besnagar.⁹

In view of the early date of such specimens both in North and South India, it cannot be said they simulated or were copies from the Roman proto-types, as asserted by Marshall.¹⁰ The type seems to have originated much earlier than the date of the Saka-Parthian city of Sirkap at Taxila.

The following copper objects are not illustrated :

No. 116, Trench B3, Layer (6), Copper wire, 4 cms. in length, considerably twisted, having a short flat spatula-like ending which probably served as an ear-cleaner.

No. 214, Kdn-1 section, similar to above but 4½ cms. in length, also serving as an ear-cleaner. Unstratified.

No. 66, Trench B3, Layer (1), a small copper wire 4·5 cms. in length, with small segments effected by a sharp instrument. Probably portion of a toe-ring (?), Muslim.

No. 164, B3 Layer (8), Piece of a copper wire, round in section, with one of the ends tapering. Length 6 cms. Indeterminate use. Mauryan.

No. 20, Kdn-2, Trench Z, Layer (6). Fragment of a rim of a copper vessel. Shape indeterminate, Satavahana.

No. 20, Kdn-2. Thick portion of copper nail or antimony rod, 1·5 cms. in length, from post-Mauryan layers.

¹ Lal, B. B., *Excavations at Hastinapura, Ancient India*, Nos. 10-11, p. 95, Fig. 30: 104.

² Altekar-Mishra, *Report on Kumrahar Excavations 1951-1955*, p. 135, Pl. LX, 5-10.

³ Puri, *Excavations at Rairh*, p. 42 ; Plate XXI, 10.

⁴ Krishna Deva and V. Mishra, *Vaishali Excavations 1950*, Pl. XXV, 10-12.

⁵ Dikshit, *Tripuri—1952*, p. 104, Pl. XXXIX, 203.

⁶ Sankalia and others, *Excavations at Maheshwar and Navdatoli*, p. 209, Fig. 108: 6.

⁷ Sankalia *et. al.*, *From History to Pre-history at Nevasa*, pp. 409-10; Fig. 185:1.

⁸ Sankalia-Deo, *Report on the Excavations at Nasik and Jorwe*, p. 108, Fig. 51, c.

⁹ A.S.I., A.R., 1913-14, Plate LX, 83-85.

¹⁰ Marshall, *Taxila*, II, p. 585.

METAL OBJECTS

MISCELLANEOUS BONE OBJECTS

(Plate XLV, B)

Among the objects of bone, two combs emanating from the Satavahana Layers are noteworthy. One of them has its teeth partially preserved and has a shallow crescentic top. The other is almost toothless (Pl. XLV, A.1-2).

The excavation yielded a number of bone points, about twelve in number. These are sharpened at both the edges terminating into sharp points. These are identified either as Surase (points or dowels used for joining wood), arrow-heads, styli or tools connected with the weaving industry. An enormously large quantity of such bone points were found in the excavations at Nasik¹ where a detailed study of such specimens is made. Being known from several other sites in India they deserve to be mentioned here only cursorarily. These occur in Layers 5-13.

No. 211. A torpedo-shaped bone object with a hole on one side, of indeterminate use. Unstratified. (Pl. XLV, B.3)

Besides this two bone pieces delicately carved with bud-shaped designs and probably forming part of bone antimony rods were recovered from unstratified deposits in Kdn-2. These probably belonged to Satavahana Period. (Pl. XLV, B.7-8; also Pl. XLVII, A.2).

SHELL OBJECTS

(Plate XLVI)

The shell objects from Kaundinyapura are devoid of any interest. They are represented by commonplace articles like fragments of rings and bangles and a stopper. Several columnella of conches recovered from the excavation indicate that shell was actually worked at the site. Bangle fragments start appearing from the Mauryan levels and their proportion is on the increase in the succeeding Satavahana phase. All the decorated pieces from the excavation belong to this late phase. The decorations are effected on the upper surface of the bangle by sawing at regular intervals. The design in some cases consists of reels and of collared beads stuck together. Two rings with their tops flattened into oval bezels also belong to the Satavahana Period.

Plate XLVI illustrates select pieces of these bangles and rings, together with the columnella of a conch found in Layer (5) and a circular disc-shaped stopper. The widespread use of these objects on many a site in ancient India is well known. The shell bangle industry from West Bengal, particularly from Dacca (now in Pakistan) is famous even to this day. In Western Maharashtra shell bangles seem to be very common in the late Satavahana Period, the industry at Ter being particularly noteworthy.

¹ Sankalia-Deo, *Excavations at Nasik and Jorwe*, pp. 121-41.

D. ORNAMENTS, ETC.

BANGLES

A LARGE number of bangle fragments were found in the excavation. These are comprised of various materials like (in order of their frequency) shell, glass, chalcedony, copper and bone, only one specimen of the last mentioned material being recorded.

The glass bangles were in all cases associated with the Muslim layers in Trench B3 but were found to have a higher antiquity in Kdn-2 where these were associated with Mauryan layers.

The two bangle pieces recovered from Trench B3 belong to the stratified variety of glass. One of them is triangular in section. It has a dull opaque grey core within which is flushed an opaque sulphur coloured yellow glass. At the triangular apex it is overlaid with a strip of bright red glass to which small studs of a milky-white glass have been affixed at regularly spaced intervals. In many cases the beads have fallen off. The second specimen represents a flattish strip of dull grey glass coated with a sap-green glass. It is overlaid with prominent ridge of identical glass having a short red border at the apex which in turn is set with small beads of white glass, at short intervals. Another unstratified sample from the same trench is comprised of a small strip of yellow glass, rectangular in section overlaid with a bright leafy-green glass.

At site Kdn-2 two bangle fragments recovered show some advance in the technique of glass fabrication. One of them, associated with Layer (8), is a mis-shaped wire of drawn glass, indicating the manufacture of glass at the site. It has a dull black surface with a dark patina on the exterior resulting from the salts contained in the batch. The second fragment is of green glass which has disintegrated considerably and leaves a pitted surface all over. It has a pentagular cross-section with very sharp edges, a feature which is associated with Mauryan glass at other sites like Prakashe in Maharashtra.¹ It has not been possible to get the specimen analysed but coupled with the fact that the same layers have yielded perfect specimens of glass ear-plugs described below show that glass of a good quality was manufactured in India in the early historical period.

SHELL BANGLES

Thirteen fragments of shell bangles were found in the excavation of which two emanated from unstratified deposits. Four fragments were associated with Layer (6) corresponding to the Satavahana Period in Trench B3, while seven were found in Kdn-2 in Layers 4-8. These pieces were sawn from the curved surfaces of large conches and do not show any distinctive features as they are of common occurrence on several sites in India. These have oval, circular, lenticular or triangular cross-sections and on only one of them a simple decoration of straight lines has been resorted to. Some of the pieces have calcined due to contact with fire which does not seem to be intentional.

AGATE AND CHALCEDONY BANGLES

Two pieces of chalcedony bangles were recorded. One fragment came from unstratified layers while another one was associated with Layer (10) of the Mauryan Period in Trench D4. The fragment is elliptical in section and is very well selected having a short black streak on one of its sides. The agate specimen is very highly polished and has a pentagular cross-section. Bangles of this material and description are of common occurrence in Mauryan strata on other sites in India.

¹ Information from Shri B. K. Thapar.

COPPER BANGLES

Four fragmentary pieces of bangles of copper were found, one each from Kdn-2, Trench Z and D4, both associated with the Mauryan layers ; but the two pieces found in B3 can safely be attributed to Period I. In all the cases the fragments are non-descript without any shape being heavily rusted. The fragments of Period I have a circular cross-section, the largest mass being about 10 cms. in length.

A BONE BANGLE(?)

A solitary fragment of a bone bangle was recovered from D4, Layer (10) attributed to Period I at the site. The fragment has a high polish. Its identity as a bangle is not certain as the piece may well be a portion of the rib of some animal.

EAR PLUGS

(Fig. 38 : 1-8)

A distinct form of ornament extensively used at Kaundinyapura was the 'Tatamka' or the ear-plug. It is made from various materials like red or black jasper, blue or green glass and terracotta. The stone and the glass specimens are very highly polished, very elegantly finished and therefore appear to have served the wealthy, while the terracotta specimens were intended for the masses. The most characteristic shape of this ornament was a plain disc, occasionally decorated on the top and having concave side-walls which fit closely into the ear-lobe. Though known from several excavations earlier, the exact significance of this object was not realised till a crystal specimen decorated with gold was found at Prabhas Patan in Saurashtra.¹ We have identified this object as Tatamka mentioned in Sanskrit literature because its usage seems to have been common enough. The Tatamka is always described as "circular in shape, heavy in weight and inserted in between the lobes" a description which admirably fits into the types of specimens under study.

At Kaundinyapura three main varieties of the type have been recognized:

- | | |
|------------------|---|
| <i>Type 1</i> | .. Broad disc with a convex underside, decorated top and concave walls. |
| <i>Variet 1a</i> | .. Broad disc with flat sides, plain on both surfaces and having high concave walls. |
| <i>Type 2</i> | .. Long cylinder, circular in section and having highly polished surface all over. |
| <i>Type 3</i> | .. Short plugs with straight sides, in varying diameters. |
| <i>Variet 3a</i> | .. Similar to above but with tapering sides like truncated cones. |
| <i>Variet 3b</i> | .. Small discs similar to above but with prominent grooves for the walls like a miniature <i>Damaru</i> . |

The stone and the glass specimens generally show an excellent workmanship and finish, but in the case of terracotta specimens both the planes of the disc are not parallel to each other and indicate a rough-and-ready use.

¹ *Indian Archaeology—a Review* for 1956-57, Plate XVIII, A. 1.

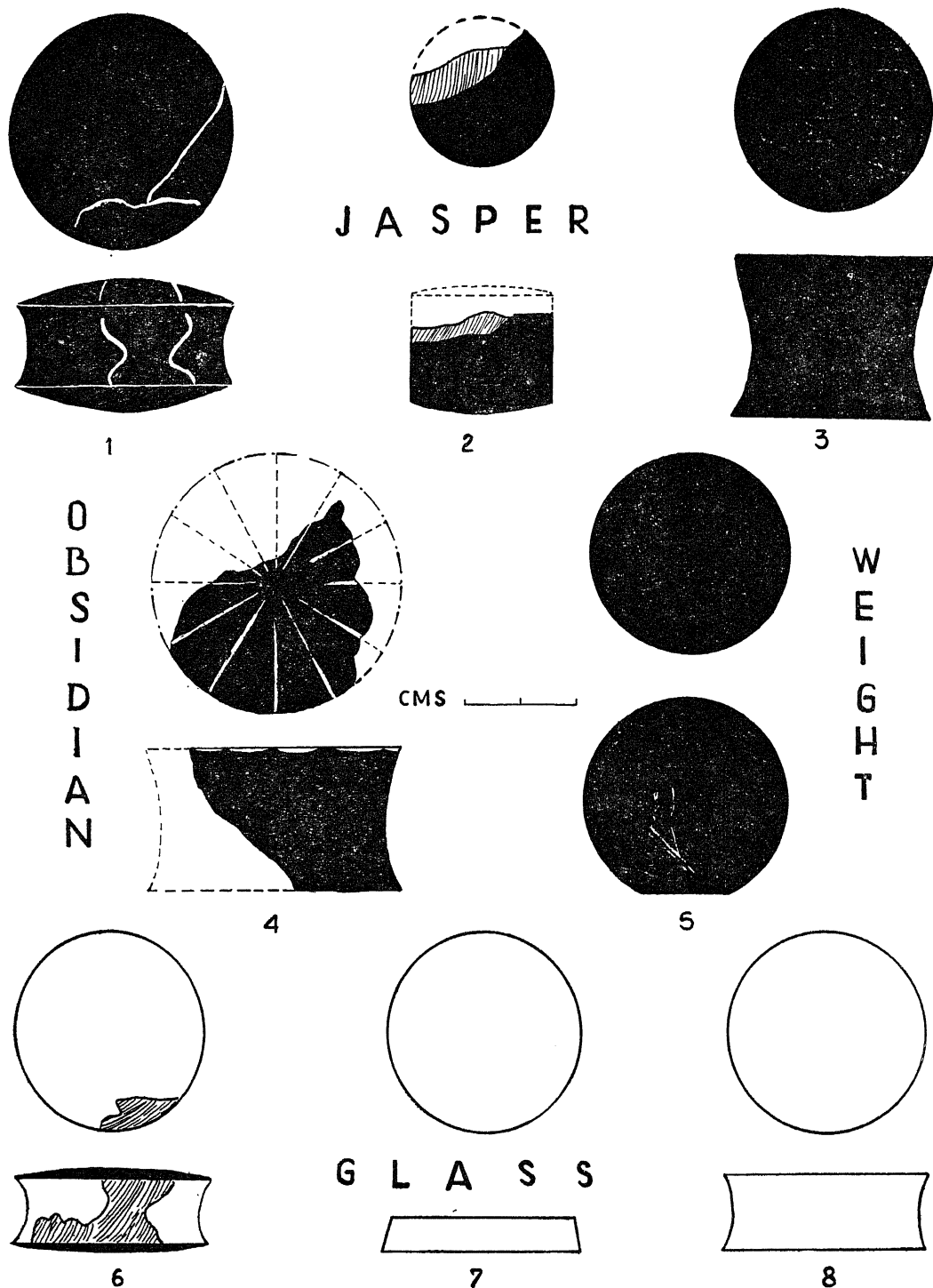


Fig. 38
Ear plugs and a weight 1-8

The following is the list of specimens recovered from the excavation :

(i) JASPER

1. Ear-plug of black jasper, very highly polished, top ornamented with eight quadrantal ribbings in the form of waves. Convex underside, smooth concave walls. Kdn-2 103 from early level of Layer (8), Mauryan, Fig. 38:1. Diameter 3·5 cms., height 1·7 cms. (Plate XLVII, A.1).

2. Ear-plug similar to above; without decoration at top; fragmentarily preserved. Layer (8). Diameter when complete 4 cms., height 1·7 cms., Mauryan.

3. Ear-plug of black jasper; complete specimen. Very highly polished. Both the sides are convex and the wall intended for the lobe is concave all over. Diameter 3·8 cms., height 2 cms., Trench Z, Layer (8), Mauryan. (Plate XLVII, B.1).

4. Fragment of ear-plug; black-jasper, similar to above. Diameter when complete 4 cms., height 2·2 cms., No. 268, Trench B, Layer (6), Mauryan. Not illustrated.

5. Fragment of ear-plug of black jasper, having straight walls. The specimen shows that the inner core is horn-like and the outer edges have a rind-like appearance, probably due to the fact that the specimen was heated before polishing. The exterior bears a brilliant high polish. Diameter when complete 2·5 cms., height 7·5 cms., No. 466, Trench C, Layer (8), Mauryan. Not illustrated.

6. Ear-reel of black jasper, complete, having straight flat sides and a concave surface for the lobes (Type 1a). Diameter 3·2 cms., height 2·5 cms., No. 257, Trench E, Layer (4), post-Mauryan or Satavahana. (Plate XLVII, B.2; Fig. 38:3).

7. Ear-plug of red jasper; cylindrical circular in shape, very highly polished but damaged by use. No. 97, D4, Layer (4), length 4·6 cms., diameter 3 cms., late Satavahana. Fig. 38:2.

8. Fragmentary ear-reel of obsidian or brownish-black glass. Decorated with twelve petalled star on the top, flat underside and slightly concave walls. Diameter 4·2 cms., height 2·5 cms. Type 1. Badly smashed specimen. No. 420, Trench C, Layer (7), Mauryan. Fig. 38:4.

(ii) GLASS

9. Black glass ear-plug with a very heavy ashy-white patina. Edges of the flat sides of the disc ornamented with short radial strokes. Slightly concave high walls. Damaged. D4 Layer (3). Diameter when complete 4·5 cms., height 1·7 cms., from a late level of post-Satavahana Period. (Plate XLVII, C).

10. Green glass ear-plug with a patinated surface, damaged but similar to above without marginal decoration or strokes Kdn-2. Trench 1, Layer (8), Mauryan. Diameter when complete 3 cms., height 1·6 cms.

11. Green glass ear-reel of transparent bluish-green glass with flat sides and concave walls for the lobes. The glass is highly corroded, the corrosion starting from different centres and covering the edges. Diameter 3·5 cms., height 1·3 cms. Trench B, Layer (7), Mauryan. (Plate XLVIII, A; Fig. 38:8).

12. Green glass disc, similar to above but thinner and having slightly oblique walls. Made of high quality clear transparent bluish-green glass, diameter 3·5 and 3·2 cms.,

height 5 mms. Found in association with No. 11. The disc is too thin for insertion in the lobe and cannot be used except in a mount. Trench B, Layer (7), Mauryan. (Plate XLVIII, A.2; Fig. 38:7).

13. Ear-plug of vermilion opaque glass steeped into a layer of leaf-green copper glass, about 1 mm. in thickness. The sides of the plug are flat and the wall for the lobe is slightly concave. Diameter 3.5 cms., height 1 cm. Trench E, Layer (7), Mauryan. Fig. 38:6.

The vermilion glass is similar to the examples known from Nasik.¹

(iii) TERRACOTTA

Terracotta ear-plug of medium size, with flat sides and grooved side walls. Red-ware with a pinkish slip on the exterior; well baked. No. 101, D4, Layer (6). Diameter 3 cms., height 1.7 cms. Late Satavahana. Type 3.

Terracotta ear-plug similar to above but with slightly tapering sides. Red-ware with pinkish slip, well baked. No. 138, B3, Layer (7). Diameter 2.3 cms., height 1.8 cms. Late Satavahana.

Terracotta ear-plug of small size similar to No. 138 above but with straight sides. Red-ware with a dull reddish slip; well baked. No. 135, B3, Layer (7). Diameter 2.2 cms., height 1.8 cms. Late Satavahana.

Terracotta ear-plug similar to No. 135 above with straight sides. Medium sized. Gritty red-ware. No. 117, B3, Layer (6). Late Satavahana (?)

Terracotta ear-plug similar to No. 117 above, with short straight sides. Kdn-2 26 Layer (6), Diameter 2.1 cms., height 1.8 cms. Satavahana.

Terracotta ear-plug cylindrical in shape with tapering sides like a truncated cone. Red-ware with reddish slip; well baked. No. 99, D4, Layer (4). Diameter at top 1.9 cms., at base 1.4 cms., height 2.1 cms. Late Satavahana. Type 3a.

Terracotta ear-plug with a constricted concave wall resembling a *damaru*. Red-ware with identical slip. Maximum diameter 2.0 cms. Minimum diameter 1.5 cms., height 1.5 cms., Kdn-2 82, Trench Z, Layer (8), Mauryan. Type 3b.

Terracotta ear-plug with a constricted wall and shaped like *damaru*. No. 171, D4, Layer (9). Diameter 2 cms., height 1.9 cms. (not illustrated), Mauryan.

Similar to above but with deformed walls. Red-ware, well fired. No. 156, B3, Layer (8), Mauryan. Diameter 1.9 cms., height 2 cms. (not illustrated). Type 3b.

Terracotta ear-plug similar to type 3 with tapering walls. Red-ware with pinkish slip; well baked. The plug was probably prepared by slicing a lump of rolled clay and has an irregular perforation along the axis. No. 104, B3, Layer (6). Diameter 1.7 cms., height 1.4 cms. Late Satavahana.

¹ Sankalia-Deo, *Excavations at Nasik and Jorwe*, p. 101, Plate XXIII, 11, 14, etc., cf. also B. B. Lal, in *BDCRI*, XIV, 1, pp. 52-53; Plate V, 12.

The Tatamka form of the ear-plug is known from several ancient sites in India. At Taxila¹ it occurs in the Mauryan, Saka-Parthian and subsequent levels. Several specimens in various materials like riband jasper, crystal and others are known from levels associated with N. B. P. yielding layers at Kosam² and at Ujjain.³ These are also known from the Mauryan levels at Nagda⁴ and in Period III C at Prabhas Pattan⁵ in Saurashtra. They are also found at Prakashe⁶ in Khandesh in a Mauryan context. The excavations at Tripuri⁷ have yielded three specimens, two of them from the Satavahana levels. Nasik, Ter, Kondapur, Kolhapur, Bahal and Maski are some of the other sites in the Deccan where the date for this object ranges between the Mauryan and the Satavahana Periods.

The Tatamka⁸ (v.l. Tadamka) was originally an ornament made from the Tala or Palm leaves only and was intended to serve as an ear-lobe extender but at a later period it denoted any wheel-like ear-ornament irrespective of the material. A beautiful sculpture from Amaravati⁹ faithfully illustrates the mode of wearing a Tatamka by insertion of fingers into the lower end of the ear-lobe. Some of the Tatamkas recovered from excavations are excessively heavy being even of lead; but the weight was an asset in these cases, as the main purpose of the ornament was to extend the lobe.

Associated with the Satavahana house was a small pendant of clay. It comprises of a heart-shaped pendant which is decorated with two oval arches made up of small clay pellets. Under each of them appears a symbol comprising of a decorative motive with a dot and two pronged objects below. The design is repeated on both the sides. The suspension loop at the top is broken (Pl. XXXIX, 4).

¹ Marshall, *Taxila*, III, Pl. 141, Nos. 263, 264, etc.

² Information from Shri Govardhan Sharma.

³ Information from Shri N. R. Banerjee. cf. Annual Report, Arch. Department, Gwalior, 1938-39, Plate XXVII-a.

⁴ Information from Shri N. R. Banerjee.

⁵ *Indian Archaeology—A Review* for 1966-67, p. 17, Pl. XVIII, 1.

⁶ Information from Shri B. K. Thapar.

⁷ Dikshit, *Tripuri*—1952, pp. 110-11, Fig. 40.

⁸ Cf. Halayudha, *Abhidhana-ratna-mala*, p. 329 (Banaras, 1957).

⁹ Sivaramamurti, *Studies in Amaravati Sculptures*, Pl. VIII, 23 (Madras, 1942).

E. STONE OBJECTS

STONE QUERNS AND MULLERS

FEW stone-mullers and querns were found in the excavations. Of the eight mullers, two have squarish cross-section and the rest six are cylindrical. All of them are fragmentarily preserved and apparently were discarded.

Three fragments of legged querns (one surface find) were associated with the Satavahana levels at the site. (Plate XLIX, C). They have two of the four tapering legs preserved and a portion of the grinding surface. Since the distribution of this variety of legged querns has been fully dealt with by me elsewhere¹ the same ground need not be covered here. One peculiarity however may be mentioned in passing. One fragment recovered from Layer (12) at the site Kdn-2, shows that the legs are comparatively very much shorter than the usual specimens. (Plate XLIX, B). The exact stratigraphical context of this specimen cannot be ascertained in relation to the other layers in the mound, but its fairly low position leads to a suspicion that the short-legged variety preceded the long-legged saddle quern.

GRINDING SLAB AND QUERNS

The successive phases in the evolution of the grinding slabs and querns found at Kaundinyapura is very interesting. In Period I large slab-stones were used for purposes of grinding. A very large specimen from Layer (+ 9) of this phase shows the hollowed surface of grinding very clearly in the shape of a patch smoothened by constant rubbing with the muller. The stone was probably kept in an inclined angle. The muller found in association with the slab consisted of a large pebble of irregular shape, slightly concave in the middle and only some portion of it showed signs of grinding. It therefore rolled to-and-fro on the slab and the rotary motion was not complete. (Plate XLIX, A). In the Mauryan stratum the grinding slab assumed the shape of a short-legged stool, with very short stunted legs which protruded from the corners of the rectangular slab. In three specimens recovered from the site (cf. Plate XLIX, B) the blobbed legs measured between $1\frac{1}{2}$ inch from the base of the slab. The material in all the three cases was local trap. The quern or more correctly the saddle-quern assumes a distinct shape in the subsequent phase attributable to the Satavahana Period, where three fragments of legs and half of a quern was found. The legs are triangular in shape and incline sharply inwards from the base. They measure over $2\frac{1}{2}$ to 3 and even 4 inches in length. Other querns simulating this shape, known from several sites in India range from 200 B.C. to 100 A.D. and it is known that when complete, one side of the grinding slab projected outwards, the additional space being utilised for the keeping of the receptacle below the stool. The specimens are known from Kolhapur and their distribution in India has been discussed in my Tripuri Report.¹ The distinction between the Mauryan and the Satavahana specimens can well be made out from their illustrations side by side (Plate XLIX, B & C). The priority of stunted legs over the fully developed triangular legs is also well established at Prakashe.² Nevasa and Maheshwar have both yielded examples of legged querns where they have classified into three evolutionary groups having (i) undifferentiated legs, (ii) legs differentiated but not separated and (iii) differentiated and separated. The Kaundinyapura querns do not show any of these stages but the distinction between the Mauryan and the Satavahana specimens is quite clear.

¹ Dikshit, *Tripuri*-1952, pp. 105-09.

² Information from Shri B. K. Thapar.

STONE OBJECTS

MULLERS

The mullers in the Mauryan and pre-Mauryan levels at Kaundinyapura, as a rule are made from trap available locally and are cylindrical in shape. Their length varies from 6 to 9 inches with a diameter ranging from 3" to 4". In the pre-Mauryan levels one intact specimen was found to be 3 inches in length and had a diameter of about 2 inches only. Trench C, Layer (9), Pre-Mauryan or Chalcolithic-Neolithic. The specimen was probably employed for the grinding of herbs, etc.

PIVOTS

Two roundish tablets of sandstone were found in Period I and Mauryan levels respectively. These are about 5 inches in diameter in each case and are about 1-1½ inches in thickness. The former specimen has a prominent circular depression in the centre and may have been used as a potter's turn-table or as a door-pivot. The Mauryan specimen was probably used as whetstone or a slab for grinding medicinal herbs.

POTTER'S DABBER

A dabber made from local trap represents the usual accessory of a potter. It has the normal shape of a splayed rounded ridge, constricted in the middle and having a rounded holder at one end for a convenient grip. This implement hardly seems to have undergone any change throughout the ages since similar forms are met within India from the Chalcolithic times. In Northern India these are called Konoras. Earliest specimens from the Chalcolithic Period, made from Charnokite, are known from Nevasa¹ and continue there in Periods IV-V (Early Historic and Indo-Roman). Examples of Early Historical Period are also known from Rairh². At Sirkap, Taxila³ they are associated with Stratum II. At Sirpur (Raipur district) several specimens were found in the stratum attributed to 6th-7th century A.D. The Kaundinyapura specimen belongs to the Mauryan Period.

STONE BALL

Only one stone-ball, perfectly rounded and having a pitted surface was recovered in the excavation and may have served as a pounder. No. 166, Trench D4, Layer (8), depth 7·9", Mauryan. (Fig. 39:3).

STONE PLAQUE

One stone plaque, found in a fragmentary state, in Layer (8) at Kdn-2, shows that it once bore a representation of a hatched Purna-ghata, in shallow incisions. This variety of sandstone plaques is usually associated with Mediaeval Period on several sites in India. Being too fragmentary it is not illustrated here.

TOOL SHARPENER

A black-basalt fragment [No. 120, B3, Layer (6)] shows that it was used as a sharpener for various kinds of tools. It bears tool-marks and three deep depressions made by them on both the sides. The grooves are approximately 2 cms. wide and 2 cms. deep, irregularly distributed and bear many sharp cuts effected while the tools were grounded.

¹ Cf. Nevasa Report, Fig. 205 : 1-2.

² Puri, *Excavations at Rairh*, p. 22, Pl. XI, 20.

³ Marshall, *Taxila*, II, p. 502, Pl. 142, Fig. 9.

JEWELLER'S WEIGHT

Amongst the stone objects, a jeweller's weight found in Layer (7) from Trench Z, deserves special notice. It consists of a large spherical ball of black jasper, about 3.50 cms. in diameter and one of its ends is slightly rubbed off for affording a base. The weight is very highly polished and is assigned to the Mauryan Period. It weighs four *tolas* roughly or 717.28 grains or 46.48 metric grams. The loss of weight by about 2.27 grains may be accounted for on account of an accidental fracture and the weight may thus be said to confirm to the old *tola* of 180 grains. Being a solitary specimen of this class at Kaundinyapura it is not possible to say whether this weight was one of a series commonly used by jewellers in India. It is a matter of common knowledge that the jewellers in India preferred to have stone weights made from hard stones like agate, carnelian, jasper, chalcedony, etc., for the sake of accuracy as the loss of weight after constant use was very negligible. No. 70, Trench Z, Layer (7), Mauryan. (Plate XLVII, D; Fig. 38:5).

A jeweller's weight, in bluish-milky coloured chalcedony, with a rubbed base, is also known from Maheshwar, assigned to Period VI. In the section on beads, it is described as an unperforated arecanut-shaped piece but in reality is shaped like 'Songati' or a gamesman, a shape which is commonly adopted for Jewellers' weights in India. On examination this specimen was found to be exactly one *tola* in weight.¹

NEOLITHIC CHISEL

(Plate L; Fig. 39)

One of the most outstanding object of second season's work at Kaundinyapura was the finding of neolithic chisel (length 3") found in Layer (11) in Trench C recorded at the depth of 18 ft. below the surface. This chisel (Plate L, 1; Fig. 39:1) is made of diorite and is polished by grinding one of its lower edges. The sides are chipped by the bi-polar technique and the chisel is made smooth by grinding. In fact it is one of the most commonly known objects in the neolithic complex of tools. Since diorite is not found in the district it is apparent that the implement was an imported one and was brought from outside Vidarbha. It is also noteworthy to see that it is encountered virtually at the end of the "Black-and-Red ware" stratum from Kaundinyapura and it should be regarded as the earliest human artefact from Kaundinyapura. It is separated from the NBP-yielding layers (Layer 7') by about 7'-7½'.

We regard the occurrence of the chisel and the two neolithic artefacts at the site, as an instance of old objects used or left over in the pre-Mauryan strata. Absence of 'Neolithic' pottery, use of etched carnelian beads, crucibles for smelting copper and silver, and above all the incidence of 'Black-and-Red ware' of a known fabric, preclude the possibility of there being a regular 'Neolithic' stratum below Period I at Kaundinyapura.

For similar instances of pre-historic tools found in historical contexts, note a polished chisel from the Nevasa Excavation² in Period V, a polished celt from Vaishali³ in Period II. It is also known that a polished celt was found in the Mauryan strata at the Bhir Mound in Taxila in 1945 excavations.

¹ Sankalia, Subba Rao and Deo, *Excavations at Maheshwar and Navdatoli*, p. 186; Fig. 102: 31. I owe the details regarding this weight to the courtesy of Dr. Sankalia, who lent the specimen to me for study.

² Sankalia *et. al.*, *From Pre-history... at Nevasa*, p. 158; Fig. 70: 4 and Fig. 72: 7.

³ Krishna Deva and V. Mishra, *Vaishali Excavations*, 1950, pp. 64-65; Plate XXIII, D.

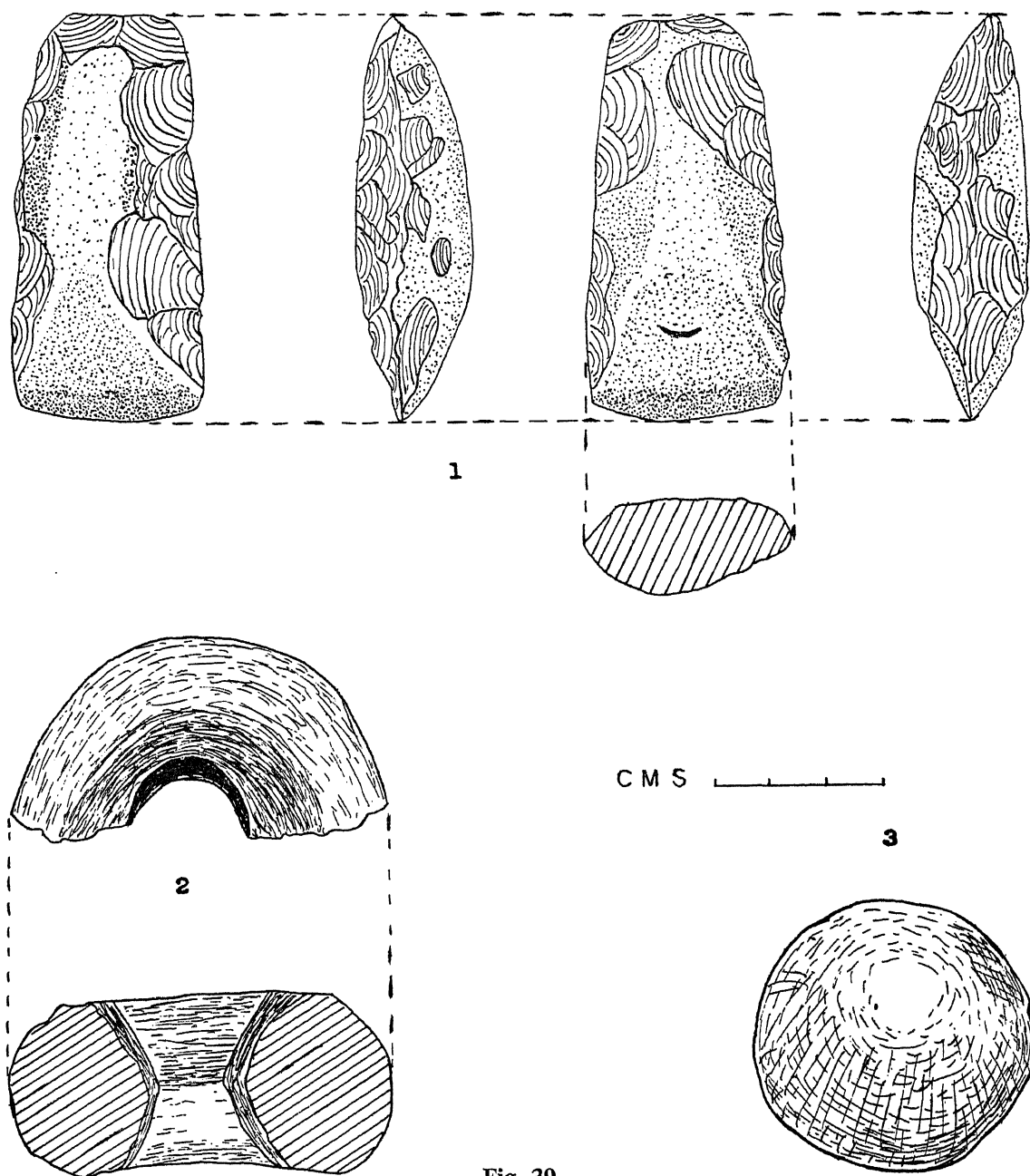


Fig. 39

Chisel, ring stones and a ball

The most concrete and conclusive evidence about the neolithic origin of Kaundinyapura is indicated by fragmentary weight or a digging stick (?) popularly known as a perforated hammer stone. (Plate L, 2; Fig. 39: 2). Only half of the ring was found on the slopes of the mound. It was without any stratified context. The specimen preserves the hour-glass perforation.

Another interesting evidence is the finding of a small ball in the same layer in another portion of the mound, namely Trench Z, encountered at the depth of 10' B.S. It is like any other trap specimens commonly known in Maharashtra. (Fig. 39:3).

F. SEALS AND COINS

(Plates XXXIX & XL)

THE important criteria for determining the stratigraphy was the incidence of coins. In all eight coins were encountered in the excavation whereas quite a large number were picked up from the surface. These are studied below by Shri V. P. Rode of the Central Museum, Nagpur.

His study reveals that the punch-marked coins of Kaundinyapura (particularly the silver one of the variety found at Kaundinyapura) are confined to the Deccan in a broader sense. The uninscribed cast coin No. 4 below is somewhat interesting because it does not bear the general characteristics of a coin and represents a unusual variety. Coin No. 5 representing a human figure on the obverse connects it with early Satavahana coins though we have no independent evidence as such. The die-struck coins with the *Shadara chakra* on the obverse, furnishes an intermediary link between punch-marked and die-struck coins. The remaining eight coins are all surface finds belonging to the Tughlaq, Bahmani, Qutb Shahi and Mughal dynasties. As they are surface pickings no great importance should be attached to them.

Besides the coins, the only datable objects which deserve attention are two terracotta seals from site Kdn-2. They are attributed to 1st-2nd century A.D.

No. Kdn-2.31 a clay seal, hand-made, about 30 mm. in diameter, plano-convex in shape, crudely formed at the back by impressing on a well-made die. It bears the figure of a majestic cock facing right. In front of it we have a *dhvajastambha* topped by a Trisula. The Dhvaja or a flowing banner is indicated by a curved line. At the proper left, above the cock and the banner appears the legend in 2nd century Brahmi characters reading 'DHANAPATISA'. (Plate XXXIX, 1).

The seal is crudely formed of a dark black clay. Being not well levigated, the edges show a tendency for cracking and is ill-burnt. The die however is cleverly made in bold technique and shows the cock in an aggressive posture in remarkably few lines. The cock, the symbol of 'Skanda' is variously portrayed on Indian seals. Recovered at a depth of 2·10 metres below surface. (Plate XXXIX, 1; Enlarged x3 in XXXIX, A).

TERRACOTTA SEALING

This sealing was found near the northern wall of the pavement in the Main Trench in Sector A while brushing its floor.

It is a small sealing, roughly triangular in section and having oval surface on its three sides. On two of the faces there are small ovoid depressions, one of which is blank. In the other there is a short legend of four letters in the Brahmi script belonging to about 1st century A.D. The legend reads, 'SAV(I)TASA'. The characters are extremely small, about 2 mm. in height, and on account of the small exergue the medial marks are not clearly visible. The sealing is also considerably worn. The external dimensions are: length 1·25 cm., breadth 1·50 cm., height 1·20 cm. Plate XXXIX, 2 shows the three faces of the sealing and an enlarged photograph (x3) of the legend appears as Plate XXXIX, 2a. Trench A, Layer (4), Depth 4 ft.

Another sealing was recovered from Trench B1, Layer (4) at a depth of about $4\frac{1}{2}$ feet (1·35 mts.) below the pavement of the Satavahana house. It comprises of a heavy cylinder circular object of black well-burnt pottery. It measures about 3·56 cms. in length and has a diameter of 2·56 cms. On one of its sides there is a shallow depression about 1·608 cms. The sunken surface of this has a impression of Kshatrapa coin which unfortunately is very much blurred for its correct identification. It is probable that it bore the symbol of a three-arched hill with a marginal legend. In the present state of preservation nothing can be read out.

COINS*

(Plate XL, A)

Exploration and excavations which were conducted for two seasons at Kaundinyapura have brought to light for the first time some very interesting coins. Though majority of the coins are from surface still there are some which come from stratified deposits and are, therefore, very useful as corroborative evidence for dating other finds from those deposits. The coins may be divided into two groups as Early and Late coins.

The Early coins include the following types :

1. Punch-marked silver.
2. Punch-marked copper.
3. Un-inscribed cast.
4. Die-struck coins.

(1) *Punch-marked silver :*

No. 210 surface find depth, 4 cms.

Sq. 1·5 cm. upper right corner clipped.

Wt. 2·76 gms.

Obv : Five symbols : (i) The Sun, (ii) Six armed symbol with arrows and taurine alternatively placed, (iii) Hollow triangle standard with two prongs on the right, (iv) A Taurine and a Swastika in a rectangular area, (v) A tree with broad leaves.

Rev : Two symbols : (i) Triskelis and (ii) Dumbbell. (Plate XL, A.1).

It is a *karshapana* coin of the 32 *rati* weight standard and belongs to Allan's BMC class 2, group XI, var. C¹; Durgaprasad's class 38A² and P. L. Gupta's Period V, A 1.³

Punch-marked silver coins of this variety are known from Mangrul⁴ in the Hingan-ghat taluq of the Wardha district and Kondapur⁵ in Kalatgi taluq of the Medak district. As both the places where these coins have been found earlier and the present place are included in the Deccan, it appears that this variety of silver punch-marked coinage is *local* in nature. It seems to have been confined to some parts of the Deccan after the disintegration of the Magadha Empire.

* This section has been contributed by Shri V. P. Rode.

¹ B. M. C. Intro. lii, p. 56, Pl. VI, 22.

² Num. Supplement for 1934, No. XLV, Pls. 16 and 21.

³ A. P. G. M. Series, No. 1, pp. 94-95.

⁴ For details see JNSI, Vol. XIX (II).

⁵ A. P. G. M. Series, No. 1, pp. 94-95.

(2) *Punch-marked copper—*

No. 143, B3 Layer (7), Depth 11 ft.

Copper rect. 1.3 cm. \times 1.2 cm.

Wt. 2.56 gms.

Obv : Four symbols out of which three are clear. These are (i) A variety of Ujjain symbol without the cross-bars, (ii) A tree with broad leaves and (iii) A ribbon of Swastika and Taurine symbols?

Rev. Blank. (Plate XL, A.2).

(3) *Punch-marked copper—*

No. 148, D3, Layer (4), Depth 6 ft.

Copper rect.

Obv : As on 2. The Ujjain symbol is without cross-bars but with a pellet in each orb.

Rev : Blank. (Plate XL, A.3).

In comparison to silver punch-marked coins the copper coins are less in number. Copper punch-marked coins have been found at Besnagar,¹ Ujjain,² Pataliputra,³ Taxila,⁴ Kasrawad,⁵ Tripuri⁶ and Nagari.⁷ The coins from Nagari have the Ujjain symbol on the reverse with cross-bars while the present coins have the Ujjain symbol on the obverse and are without the cross-bars. The present coins, therefore, represent a new variety of the copper punch-marked coins. The symbol showing a ribbon of taurine and Swastika is also a new feature on copper punch-marked coinage.

These two coins are assignable to 3rd-1st century B.C.

(4) *A square copper coin—*

No. 124, Trench D4, Layer (7), Depth 11ft.

Copper sq. 2.2 cms. \times 2.2 cms.

Obv : Indistinct object in circle within a square-raised border. (Plate XL, A.4).

Rev : Two symbols (1) Hollow Cross and (2) Hill and crescent in a circle within a square-raised border.

The symbols appearing on the reverse side of the coin are seen on Taxila⁸ and Tripuri⁹ coins. The coin has a depression in the centre, which is unusual. The depression in the centre may be due to pressure at the time of casting or at a later stage. It may, therefore, be regarded as a regular coin.

For coins of similar fabric see Coin Nos. 10 and 13 of *B.M.C.A.I.* Pl. XXXIII and Coin No. 13 Pl. 10 of *N.S.* 1937.

¹ *A. S. I., A. R.*, 1913-14, p. 210.² *Report Archl. Deptt., Gwalior*, 1938-39.³ *J. N. S. I.*, Vol. XIII, p. 144.⁴ *Ibid.*, p. 95.⁵ *J. N. S. I.*, Vol. VIII, pp. 99-100.⁶ *Tripuri*, 1952, pp. 121-24.⁷ *J. N. S. I.*, Vol. XVII, pp. 1-23, Pl. XXXIII-XXXV.⁸ *B. M. C.*, pp. 227-30, Pl. XXXIII-XXXV.⁹ *Ibid.*, p. 239, Pl. XXXV.

(5) *Another square copper coin—*

No. 139, Trench D4, Layer (7), Depth 10 ft.

Copper Sq. left hand top corner cut 2·2 cms. × 2·2 cms.

Obv : A human figure, possibly Siva, standing in the centre, holding a staff in the right hand and a pot in the left. Below a six-armed symbol, on the right are the tree and the triangle-headed standard in the railing; indistinct symbols on the left.

Rev : Indistinct symbols, probably an animal in the centre; below a river, river-with-fish. (Plate XL, A.5).

Siva and other symbols occur on Ujjain¹ and early Satavahana² coins. The coin seems to be of Ujjain-Eran type.

(6) *Die-struck coins—*

Copper rect. 1·6 × 1·5 cm. Wt. 4·48 gms.

Obv : An eight-armed symbol showing a wheel with eight umbrellas or arrows.

Rev : An Ujjain symbol, each orb of which has a pellet in the centre, a partially cut Nandipada on one orb, and Swastika in between the arms. (Plate XL, A.6).

(7) As above No. 6—

Copper rect. 1·6 × 1·6 cms. Wt. 4·24 gms. (Plate XL, A, 7).

Both the eight-armed symbol with umbrellas or arrows and the Ujjain symbol with Swastikas in between the arms are found on Ujjain coins.³ The Ujjain symbol with Nandipada occurs on early Satavahana coins.⁴ The present coins showing one symbol on either side are a new variety of Ujjain coins.

(8) As above No. 6—

Copper Sq. 1·8 × 1·6 cms. Wt. 4·75 gms.

These coins have come to light for the first time. They may be assigned to 2nd-1st century B.C.

LATER COINS

The later coins, which are all surface finds, include a type of the copper coinage of the Tughluqs, Bahmanis, Qutubshahi rulers and the Mughals. The coins are all of known varieties. They are described as under:

Ghiyasuddin Tughluq

A.H. 720-725 = A.D. 1320-1325

(1) Æ Wt. 2·94 gms. Dia. 1·5 cm.

Obv : السلطان الغازى
غياث الدين
والدين

Rev : ابوالمظفر
تغلق شاہ
السلطان

cf. B.M.C. p. 113, No. 443.

¹ B.M.C., Pl. XXXVIII, No. 1, XXXVII, 10.

² J. N. S. I., Vol. XIII, pp. 33-34, Pl. II, No. 11.

³ B. M. C., Pl. XXXVII, No. 9.

⁴ J. N. S. I., Vol. VII, Pl. II, No. 1.

Muhammadshah I Bahmani

A.H. 760-777 = A.D. 1359-1376

(2-4) Æ Wt. 3.32 gms. Dia. 1.3 cm.

Obv : ابوالمظفر
محمد شاه

Rev : بهمن
بن
السلطان

cf. N.S. XXXVII, p. 25, No. 12.

Firoz Shah Bahmani

A.H. 800-825 = A.D. 1397-1422

(5) Æ Wt. 3.65 gms. Dia. 1.4 cm.

Obv : ناصر الله

Rev : فيروز
شاه بهمنی

cf. N.S. XXXVII, p. 29, No. 27.

Muhammad Bin Humayun

A.H. 867-887 = A.D. 1463-1482

(6) Æ Wt. 14.5 gms. Dia. 2.1 cms.

Obv : بالله
المتهم
شمس الدين
والدين

Rev : بن همايون شاه
السلطان

٨٤

cf. N.S. XXXVII, p. 35, No. 50.

Abdullah Qutb Shah

A.H. 1035-1088 = A.D. 1626-1672

(7) Æ Wt. 10·37 gms. 1·9 cm.

Obv : In square legend ختم السعادة
١٥٦

Rev : دار السلطنة
صرف
حيدرآباد

cf. A.P.G.M.S., No. 3, p. 34, No. 339.

Aurangzeb Alamgir

A.H. 1068-1118 = A.D. 1658-1707

(8) Æ Wt. size

Obv : حيدر
١١٠٤

Rev : سنم
لوساک

cf. P.M.L. Vol. II, p. 266, No. 1965.

Abbreviations used in this Section

A.P.G.M.S.	Andhra Pradesh Government Museum Series, 1-3.
B.M.C.	..	..	John Allan, <i>Catalogue of Coins in the British Museum, Ancient India</i> (London, 1936).
D.M.C.	..	..	Catalogue of Coins in the Delhi Museum.
J.N.S.I.	..	..	<i>Journal of the Numismatic Society of India</i> , Vol. I-XXVI.
N.S. or Num. Supp.	..	..	Numismatic Supplement to the <i>Journal of the Asiatic Society of Bengal</i> .
P.M.L.	R. B. Whitehead, <i>Catalogue of the Coins in the Panjab Museum, Mughal Emperors</i> , Vol. II, Lahore, 1914.

KAUNDINYAPURA PLANT ECONOMY IN PRE-HISTORIC AND HISTORIC TIMES

by

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INTRODUCTION

THE carbonised foodgrains or their impressions from Kaundinyapura comprise cereals (rice, maize), legumes (peas) and the fruit remains (Jujube) and a crushed fragment of a Bamboo. The various strata from which the material has been obtained range in age from 200 B.C. to 1400 A.D. from slightly earlier Mauryan to the Muslim Period.

The material was kindly sent to me by Dr. Moreshwar G. Dikshit, who also very kindly provided detailed information regarding the archaeological provenance of the samples. There are three samples which definitely belong to the Post-Mauryan (about 200 B.C. to 300 B.C.) one of them from B3 Layer (7) contains Matter and the Jujube and the other from D4 Layer (7) comprises Rice and Bamboo. The third sample containing a hard tar-like mass of spikelets of rice comes from D4 Layer (9) (about 500 B.C. to 400 B.C.) and is slightly earlier than the Mauryan stratum.

Later, Dr. Dikshit kindly sent me a potsherd from Layer (2) at Kaundinyapura, which is decorated by a pattern believed to have been formed by turning an ear of Maize on a bolstered surface of clay. It is discovered from a Muslim building from the excavations dated to the Bahmani Period. From similar sherds at Kolhapur it appears that the specimen might be slightly earlier to 1435 A.D.

Methods.—No special techniques were employed except examining the grains under the low power binocular for any recognizable morphological details and taking measurements for comparing them with the corresponding modern grains.

From the impression on the potsherd plasticine castes were prepared and matched with those of the modern ears of Maize on plasticine. On the clay models of the potsherd prepared here impressions were made by turning an ear of Maize and these were then compared with those on the potsherd.

For opportunity to work this interesting material my thanks are due to Dr. Moreshwar G. Dikshit, who very kindly sent this interesting material to me and to Dr. K. R. Surange, the Director of the Birbal Sahni Institute of Palaeobotany, for permission to undertake this investigation.

DESCRIPTION OF THE FOODGRAINS (CEREALS)

RICE

Oryza sativa var. *sativa* L.

(Pl LII, 1-5 & LIII, 1-2)

The grains of rice from D4 Layer (7) are more or less oblong and strongly ribbed (usually three-ribbed) and are made up of two varieties one comprising comparatively

KAUNDINYAPURA PLANT ECONOMY IN PRE-HISTORIC AND HISTORIC TIMES

longer seeds (Pl. LII, 4) than in the other (Pl. LII, 5). The kernels of the long-seeded variety are sixty-five in number while those of the short-seeded variety are over two hundred and fifty. The kernels of the short-seeded variety are comparatively broader than those of the long-seeded variety. Their dimensions are shown in Tables 1 and 2.

In some grains a part of the fertile lemma showing the chess-board pattern is also preserved.

TABLE 1
Oryza sativa var. *sativa* L.
Shorter grains
(Pl. LII, 5)

				Average	Minimum	Maximum
Length in mm.	..	..	..	3.2	3.0	3.5
Breadth in mm.	..	..	..	2.7	2.0	3.0
Thickness in mm.	..	..	..	1.3	1.2	1.5
L : B	..	..	..	1.1	0.70	0.88
T : B	..	..	..	0.40	0.60	0.50

TABLE 2
Oryza sativa var. *sativa* L.
Longer grains
(Pl. LII, 4)

				Average	Minimum	Maximum
Length in mm.	..	..	..	4.0	3.0	4.8
Breadth in mm.	..	..	..	2.0	1.5	2.2
Thickness in mm.	..	..	..	1.1	1.0	1.5
L : B	..	..	..	2.0	2.0	2.1
T : B	..	..	..	0.55	0.66	0.68

The spikelets in the hard tar-like mass (Pl. LII, 1) are very fragile. Several attempts to recover complete spikelets (Pl. LII, 3) from the mass proved in vain; consequently it has not been possible to know—the exact size of the spikelets, the shape, the nervation of the fertile lemma and also the presence or absence of the awn. Rachilla has been seen in some grains (Pl. LIII, 1-2). The fragments of the fertile lemma however show the outer surface made up by a chess-board pattern (Pl. LII, 2) but the hair or their scars have not been noted. From the fragments still sticking to some grains it appears that the fertile lemma was probably five-nerved.

The palea as far as could be made out is less convex and closely adhering to the grains. It is three-nerved.

The spikelets are invariably single-grained. With the exception of a few which approach the longer grains (Pl. LII, 4) the rest have exactly the same shape and dimensions as those of the short-seeded variety (cf. Table 1).

The carbonised grains of rice are referred to the variety *sativa* of *Oryza sativa*, though the shorter grains, both in shape and size, seem to approach those of *O. glaberrima* Steud., a species distributed in Western Tropical Africa. This species has been introduced into India in recent times. That the Kaundinyapura rice grains do not belong to this African species is borne out by the following observations:

- (i) The grains (except in the tar-like mass) are made up of two kinds (the long and the short ones) which in other essential characters are exactly similar.
- (ii) The grains and the spikelets in the tar-like mass are exactly similar to the short grains in the other sample.
- (iii) Very much similar shorter grains are produced by some strains of rice grown in Nepal, Japan, Korea and China and these are referred to *Oryza sativa* var. *Sativa* (Himada, 1956, Plates 1-6).

The archaeobotanical records take the history of cultivated rice in India as far back as 2300 B.C. (Ghosh 1961) but such an extremely short-grained rice has hitherto not been reported. If the Kaundinyapura grains belonged to this African species, then it would imply an African influence or African contacts with the Kaundinyapura folk which is not borne out by the archaeological finds at the site. At the same time there is no Chinese or Japanese influence at the site but the Chinese Celadon or other wares have frequently been found in other and older sites in Deccan.

From the above it appears that one would be justified in referring Kaundinyapura rice grains to *O. sativa* var. *sativa* and not to *O. glaberrima*, the African species.

MAIZE

Zea mays L.

(Pl. LI)

The correct interpretation of impressions of foodgrains on potsherds is indeed a very vexing problem. The potsherd from Kaundinyapura bearing impressions that look very much like those of a cob of maize presents a similar problem.

This potsherd (Pl. LI, 1) bears incomplete impressions of two kinds. In one of them (of which there are two impressions) the impression is made up of 6 rows each separated by a ridge about 1 mm. to 3 mm. in thickness. Each row is made up of a linear series of squarish or horizontally oval cavities each about $3.6 \times 2.5 \times 2.3$ mm. in dimensions. These cavities in one of the impressions seem to grow narrower and smaller towards the top (if the part of the potsherd painted red represents the top) while in the other impression they grow narrower in the opposite direction. Each impression is about 3.5-4 cm. broad and was longer than 6 cm. since that much length can be measured from the longest incomplete impression.

KAUNDINYAPURA PLANT ECONOMY IN PRE-HISTORIC AND HISTORIC TIMES

These impressions look very much to have been made by turning an ear of maize on the bolstered surface of clay. The plasticine casts prepared of these compare with the impressions of an ear of maize (Pl. LI, 5). Plasticine and clay models of the potsherd were also prepared and the impressions were made on them by turning an ear of maize and the results seem to convince that the Kaundinyapura artisans must have made similar imprints on their pots but the ears of maize they had used were of a small-grained variety with the rows of seeds not so contiguous as in our specimen. Some poorly developed ears of maize or those belonging to primitive varieties do often have spaced rows of grains which are usually smaller in size.

Between these two impressions there is seen another kind of impression which appears to have been made by pressing the under surface of a leaf of maize against the clay. A raised ridge corresponding to the midrib is seen running along the middle of the leaf-like impressions. There are two such leaf-like impressions, both incomplete and the longest of the two is 5.5 cms. and about 2.5 cms. broad at the broadest region. From the impression the blade seems to have been slightly curved and not straight.

From the present study it appears that the impressions on the potsherd were in all probability made from the leaf-blades and the ears of maize.

LEGUMES

(Pl. LIII, 3)

The grains from B3 Layer (7) are variable in size, about 2.5 mm. in diameter, sub-angularly round, slightly compressed with a distinct hilum scar. A few of them are wedge-shaped and approach those of *Lathyrus sativas* L. While the rest appear to be a mixture of *Pisum arvense* L. and *Lathyrus sphaerious* Retz. (Pl. LVI).

FRUIT REMAINS

Zizyphus nummularia (Burm.f.) W. & A.

(Pl. LIII, 4)

In the collection of legumes from B3 Layer (7) five (one complete and the rest broken) fruit stones were discovered. The fruit stones, about 5.7 mm. are globose or ovoid in shape with rugose surface. From the broken specimens it appears that they are 1-3 celled.

OTHER PLANT REMAINS

Charred Bamboo

The specimen from D4 Layer (7) labelled as charred bamboo is very much crushed and is a heap of fibres. It can hardly be precisely recognised as a bamboo but the presence of numerous fibres in the crushed stem fragment does, however, suggest that it might belong to a bamboo stem. There are hardly any recognizable characters in the specimen to help in the reference of the specimen to any species of Pooideae-Arundinae or to that of Bambuseae. A workable fragment has been however picked up for anatomical studies which might help in its identification.

DISCUSSION

The cereals in the collection include rice and maize only.

From more or less the same horizon (100 B.C. to 200 B.C.) rice in India has been hitherto known from Ujjain, Rupar, Nagda, Pataliputra and Kunnattur (Ghosh 1961). A comparison of the dimensions of Kaundinyapura rice with that discovered from the sites mentioned above shows that the Kaundinyapura rice consists of smaller grains. Such a short-grained variety of rice hitherto has not been known from ancient India where the history of rice, as known from the archaeo-botanical records, now goes back to 2300 B.C. (Ghosh *loc. cit.*). The grains from Kolhapur 100 A.D. however approach the size of the Kaundinyapura rice grains. Of the two sub-species-*indica*, the long-grained rice, is believed to have originated in India, while the sub-species *japonica*—the short-grained rice, is believed to have originated in Japan. If that is true then the Kaundinyapura rice would tend to suggest the cultural contacts of the ancient inhabitants of Kaundinyapura folk with Japan or broadly speaking, with the NE. The archaeological discoveries at the site, however, do not support the above conclusion derived from the archaeobotanical material. About this Dr. Moreswar G. Dikshit writes (personal communication) that at this site there is “no direct evidence for any Chinese or Japanese influence. The site was remarkably free from Chinese Celadon or other wares which are frequently associated with some old sites in Deccan.”

The impressions of cobs of maize on the potsherd, as far as it has been possible to determine, are all the most important. The practice of decorating the pots by rolling a maize cob on the wet clay is known to have been prevalent elsewhere to, for instance, during the post-Columbian times amongst the pre-historic folk of Ile Ife in the Yoruba territory in Africa (Goodwin 1953, Jeffreys 1953 and Mangelsdorf and Reeves 1959). Kaundinyapura specimen is hitherto the solitary example of the occurrence of pre-historic maize in India.

Layers 2-3 at this site, from which the potsherd has been discovered are the Muslim layers and have yielded a lockward of the Turkish type (spring and push variety) known from the 7th and 9th century layers at Sirpur (M.P.), and also at the unstratified excavations at Sanchi and of about 6th to 7th century levels at Nalanda. The earliest date for these locks in Pompeii and Verulamium in England is about 2nd and 3rd century A.D. Exactly similar sherds of the same date have been found in the excavations at Kolhapur conducted by Dr. Sankalia and Dr. Dikshit and the corresponding Kolhapur layers are dated about 1435 A.D. (from personal communication by Dr. Moreswar G. Dikshit). From this it would appear that the evidence of maize in India is not in any case later than 1435 A.D. which makes it older than the African find and tends to establish its pre-Columbian age. From Indian literature Prof. P. K. Gode (1950) has been able to trace the antiquity of maize in India from 1540 A.D. which obviously means its introduction into India by the Portuguese travellers in about 1498 A.D. But this archaeobotanical find tends to extend the history of maize in India to the pre-Columbian Period.

Together with the pre-historic maize from Java (cf. Tihara Suto and Yoshida 1956, p. 503), the Kaundinyapura impressions are the only examples of the pre-Columbian occurrence of maize in the old world. From the new world numerous records of pre-historic maize are known. Long before the arrival of Columbus there, maize formed the basis of the highly developed Inca, Maya and AZTEC civilizations and was the staple

crop from Canada to Chile for several thousand years (Nickerson 1953). Hitherto the earliest archaeological evidence from the old world comes from Huaca Prieta in South America (about 850 B.C.) next to these are from the Tularosa Cave in North America about 400 B.C.—200 B.C. and from Mexico and Central America from a cave in Lower California dated to B.C. 100 (Nickerson *loc. cit.*).

Evidences of the occurrence of maize from sedimentary deposits under Mexico city, which antedate human occupation, have been brought forward from the palynological investigation of these sediments (Barghoorn *et. al.* 1954). The human occupation in this region is now believed to date from 99000 years (Richards 1953).

The origin of maize in the new world is now well-established and its pre-Columbian occurrence in the old world suggests that it reached the old world during the pre-Columbian times when the contacts between the old and the new worlds (South America and Asia) existed. That it was quite possible to sail in either direction across the vast expanse of the Pacific has been amply documented by Beck (1938).

Legumes in ancient India have, hitherto, been known from Navdatoli-Maheshwar, 1500 B.C. to 1000 B.C. (Vishnu-Mittre 1961) ; Khokhrakot, 100 B.C. (Vats 1940) and Nevasa, 1318 A.D. to 1759 A.D. (Sankalia *et. al.*). The Kaundinyapura material seems to bridge the gap in the history of legumes in India from the Chalcolithic Period to the Early Historic Period especially the history of *Pisum arvense*.

The remains of Ber have hitherto been found at Navdatoli-Maheshwar (Vishnu-Mittre *loc. cit.*) and both the Navdatoli-Maheshwar finds, earlier referred to *Z. jujuba* Lamk as well as the Kaundinyapura specimens belong to *Zizyphus nummularis* (Burm.f.) W. & A. This is in fact a dry waste land species and is also found in the ravine tracts in the vicinity of rivers such as Jumna and Chambal. It grows abundantly and often gregariously in such habitats and is of common occurrence in Merwara and Bundelkhand. It extends from the Punjab and Rajputana to Central and Southern India. The dry branches of this plant are extensively used for making fences, and the leaves are used as fodder for camels, sheep, goats, etc. This fruit is eaten by the inhabitants especially during famine.

Post script.—The identification of the impressions on potsherd to that of maize inspired further research into the history of maize in India, especially through pollen analysis of Postglacial sediments and the pollen morphology of primitive varieties of maize. The results of this investigation were presented at the Special Session of the Palaeobotanical Society, held at Lucknow in December 1964 together with the work on Kaundinyapura material and subsequently both these papers have been published [*Palaeobot.* Vol. 15, Nos. (1 & 2) : 152-156, 176-184, 1966]. The paper on Kaundinyapura Plant Economy printed above is just the same as already published except Plates LII-LIII which were not relevant to the study.

The paper dealing with pollen of maize [Vishnu-Mittre and H. P. Gupta 1966. Pollen morphological studies of some primitive varieties of maize (*Zeamays* L.) with remarks on the history of maize in India. *Palaeobot.* Vol. 15, Nos. (1 & 2) : 152-156] includes comments of experts on the impression on Kaundinyapura potsherd. Whereas Prof. M. E. D. Jeffreys of Witwatersrand University commends the discovery of pre-Columbian maize, Dr. P. C. Mangelsdorf of Harvard and Dr. N. L. Dhawan of Indian Agricultural Research Institute, New Delhi, have expressed their difference of opinion. On the suggestions of Dr. Richard Mc Neash of the National Museum of Canada and Dr. James

Griffin of the University of Michigan, Dr. Mangelsdorf has suggested the possibilities of the impression being that of a piece of basketry or of a coarse textile or fabric. The colleagues mentioned above had the opportunity of seeing a photograph of the specimen sent by me. In a recent communication (personal letter dated March 14, 1967 addressed to Mr. H. P. Gupta) Dr. George F. Carter of the Isaiah Bowman, Department of Geography, the Johns Hopkins University, Baltimore, Maryland, U.S.A. has, while commending the identification, sent us a series of sketches from his experiments on the comparative study of the impressions of maize and of basketry and coarse fabric disproving the criticism of Dr. N. L. Dhawan and that of Dr. Mangelsdorf and categorically supporting the identification.

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EXPLANATION OF PLATES

(All figures from untouched negatives)

Plate LI

- Fig. 1 .. The potsherd bearing two impressions of a cob of maize, between these two a leaf-like impression is seen. Nat. size.
- Figs. 2-3-4 .. Plasticine casts of the impressions. Figs. Nat. size.
- Fig. 5 .. Impression of a modern ear of maize on a wet clay model of the potsherd. The impression is made by rolling the ear of maize on the clay surface. Slightly enlarged.

Plate LII

- Fig. 1 .. A fragment of the tar-like mass with the spikelets of rice. x4.
- Fig. 2 .. Cellular pattern on a spikelet. x100.
- Fig. 3 .. Spikelets of rice. x4.
- Fig. 4 .. Grains of rice (the long-grained variety). x4.
- Fig. 5 .. Grains of rice (the short-grained variety). x4.

Plate LIII

- Figs. 1-2 .. A part of the spikelet separated from the tar-like mass showing the rachilla at two different foci. The cellular pattern is also very clear. x100.
- Fig. 3 .. Leguminous seeds. x4.
- Fig. 4 .. Fruit-stones of *Zizyphus nummularia*. x4.

THE animal remains from Kaundinyapura comprises mostly of cows and a few of goat, sheep, pig, ass, elephant, dog, deer and turtle. All these bones being very fragmentary, no measurements could be taken. A large number of these bones belong to the Phase III, IV and V i.e. Historic Period. Practically all the bones that belong to Period I or Phase II are of *Bos Indicus* (cows). The following classification describes the remains of the animals :

Class—*Reptilia*
Order—*Chelonia*
Family—*Trionychidae*
Chitra indica (Gray)

Fragment of carapace :

1. Kdn-2 196 Tr. E(4) Phase IV ; 3. Kdn-2 197 Tr. E(4) Phase IV.
2. Kdn-2 198 Tr. E(4) Phase IV ;

Class—*mammalia*
Order—*Proboscidae*
Family—*Elephantidae*
Elephas maximus

Isolated molar tooth from upper jaw :

4. Kdn-2 338 Tr. C(6) Phase III. (Pl. LIV, A)

Order—*Perisodactyla*
Family—*Equidae*
Equus assinus

Fragment of metacarpal :

5. Kdn-2 224 Tr. E(5) Phase IV.

Order—*Arthiodactyla*
Family—*Bovidae*
Bos Indicus Linnaeus

Fragment of right upper jaw with molar teeth :

6. Kdn-2 100 Tr. C(6) Phase III ; 7. Kdn-2 257 Tr. Z(7) Phase II.

Fragment of upper jaw with molar teeth :

8. Kdn-2 85 Tr. C(4) Phase IV.

Fragment of right lower jaw with pre-molar and molar teeth :

9. Kdn-2 175 Tr. E(3) Phase V.

ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA

Fragment of right lower jaw with pre-molar teeth :

- | | |
|------------------------------------|----------------------------------|
| 10. Kdn-2 49 Tr. B(5) Phase IV ; | 12. Kdn-2 84 Tr. C(4) Phase IV ; |
| 11. Kdn-2 104 Tr. C(6) Phase III ; | 13. Kdn-2 168 Tr. E(3) Phase V. |

Fragment of right lower jaw with molar teeth :

- | | |
|-----------------------------------|----------------------------------|
| 14. Kdn-2 98 Tr. C(6) Phase III ; | 17. Kdn-2 167 Tr. E(3) Phase V ; |
| 15. Kdn-2 205 Tr. E(4) Phase IV ; | 18. Kdn-2 332 Tr. Z(8) Phase II. |
| 16. Kdn-2 324 Tr. Z(8) Phase II ; | |

Fragment of left lower jaw with pre-molar and molar teeth :

- | | |
|-----------------------------------|-----------------------------------|
| 19. Kdn-2 99 Tr. C(6) Phase III ; | 20. Kdn-2 203 Tr. E(4), Phase IV. |
|-----------------------------------|-----------------------------------|

Fragment of left lower jaw with molar teeth :

21. Kdn-2 283 Tr. Z(7) Phase II.

Fragment of lower jaw :

- | | |
|-----------------------------------|-----------------------------------|
| 22. Kdn-2 38 Tr. B(4) Phase IV ; | 25. Kdn-2 41 Tr. B(5) Phase IV ; |
| 23. Kdn-2 258 Tr. Z(7) Phase II ; | 26. Kdn-2 276 Tr. Z(7) Phase II ; |
| 24. Kdn-2 282 Tr. Z(7) Phase II ; | 27. Kdn-2 365 Tr. Z(7) Phase II. |

Isolated pre-molar teeth from upper jaw :

- | | |
|-----------------------------------|----------------------------------|
| 28. Kdn-2 191 Tr. E(4) Phase IV ; | 29. Kdn-2 208 Tr. E(4) Phase IV. |
|-----------------------------------|----------------------------------|

Isolated molar teeth from lower jaw :

- | | |
|------------------------------------|----------------------------------|
| 30. Kdn-2 112 Tr. C(6) Phase III ; | 32. Kdn-2 321 Tr. Z(8) Phase II. |
| 31. Kdn-2 233 Tr. E(5) Phase IV ; | |

Isolated molar teeth from lower jaw :

- | | |
|------------------------------------|-----------------------------------|
| 33. Kdn-2 55 Tr. B(5) Phase IV ; | 42. Kdn-2 56 Tr. B(5) Phase IV ; |
| 34. Kdn-2 58 Tr. B(7) Phase II ; | 43. Kdn-2 83 Tr. C(4) Phase IV ; |
| 35. Kdn-2 105 Tr. C(6) Phase III ; | 44. Kdn-2 229 Tr. E(5) Phase IV ; |
| 36. Kdn-2 261 Tr. Z(7) Phase II ; | 45. Kdn-2 262 Tr. Z(7) Phase II ; |
| 37. Kdn-2 263 Tr. Z(7) Phase II ; | 46. Kdn-2 303 Tr. Z(7) Phase II ; |
| 38. Kdn-2 305 Tr. Z(7) Phase II ; | 47. Kdn-2 310 Tr. Z(8) Phase II ; |
| 39. Kdn-2 313 Tr. Z(8) Phase II ; | 48. Kdn-2 314 Tr. Z(8) Phase II ; |
| 40. Kdn-2 319 Tr. Z(8) Phase II ; | 49. Kdn-2 323 Tr. Z(8) Phase II. |
| 41. Kdn-2 334 Tr. Z(8) Phase II ; | |

Isolated third molar teeth from lower jaw :

- | | |
|-----------------------------------|----------------------------------|
| 50. Kdn-2 26 Tr. B(2) Phase V ; | 53. Kdn-2 148 Tr. E(3) Phase V ; |
| 51. Kdn-2 257 Tr. Z(7) Phase II ; | 54. Kdn-2 298 Tr. Z(7) Phase II. |
| 52. Kdn-2 306 Tr. Z(7) Phase II ; | |

Fragment of skull :

55. Kdn-2 20 Tr. B(2) Phase V ; 56. Kdn-2 216 Tr. E(4) Phase IV.

Fragment of thoracic vertebra :

57. Kdn-2 279 Tr. Z(7) Phase II ;

Fragment of caudal vertebra :

58. Kdn-2 187 Tr. E(4) Phase IV.

Fragment of vertebra :

59. Kdn-2 25 Tr. B(3) Phase V ; 62. Kdn-2 200 Tr. E(4) Phase IV ;
 60. Kdn-2 218 Tr. E(5) Phase IV ; 63. Kdn-2 247 Tr. E(6) Phase III.
 61. Kdn-2 248 Tr. Z(7) Phase II ;

Centrum of vertebra :

64. Kdn-2 177 Tr. E(3) Phase V.

Fragment of rib :

65. Kdn-2 23 Tr. B(2) Phase V ; 75. Kdn-2 32 Tr. B(4) Phase IV ;
 66. Kdn-2 33 Tr. B(4) Phase IV ; 76. Kdn-2 37 Tr. B(4) Phase IV ;
 67. Kdn-2 73 Tr. C(3) Phase V ; 77. Kdn-2 76 Tr. C(3) Phase IV ;
 68. Kdn-2 88 Tr. C(6) Phase III ; 78. Kdn-2 134 Tr. C(6) Phase III ;
 69. Kdn-2 155 Tr. E(3) Phase V ; 79. Kdn-2 186 Tr. E(4) Phase IV ;
 70. Kdn-2 213 Tr. E(4) Phase IV ; 80. Kdn-2 220 Tr. E(5) Phase IV ;
 71. Kdn-2 226 Tr. E(5) Phase IV ; 81. Kdn-2 230 Tr. E(5) Phase IV ;
 72. Kdn-2 235 Tr. E(5) Phase IV ; 82. Kdn-2 247 Tr. E(6) Phase III ;
 73. Kdn-2 259 Tr. Z(7) Phase II ; 83. Kdn-2 260 Tr. Z(7) Phase II.
 74. Kdn-2 281 Tr. Z(7) Phase II ;

Fragment of scapula :

84. Kdn-2 39 Tr. B(4) Phase IV ; 91. Kdn-2 50 Tr. B(5) Phase IV ;
 85. Kdn-2 150 Tr. E(3) Phase V ; 92. Kdn-2 162 Tr. E(3) Phase V ;
 86. Kdn-2 176 Tr. E(3) Phase V ; 93. Kdn-2 176 Tr. E(3) Phase V ;
 87. Kdn-2 179 Tr. E(3) Phase V ; 94. Kdn-2 180 Tr. E(3) Phase V ;
 88. Kdn-2 242 Tr. E(6) Phase III ; 95. Kdn-2 251 Tr. E(6) Phase III ;
 89. Kdn-2 290 Tr. Z(7) Phase II ; 96. Kdn-2 295 Tr. Z(7) Phase II.
 90. Kdn-2 328 Tr. Z(8) Phase II ;

Fragment of proximal end of humerus :

97. Kdn-2 11 Tr. A(2) Phase V ; 101. Kdn-2 43 Tr. B(5) Phase IV ;
 98. Kdn-2 110 Tr. C(6) Phase III ; 102. Kdn-2 122 Tr. C(6) Phase III ;
 99. Kdn-2 188 Tr. E(4) Phase IV ; 103. Kdn-2 201 Tr. E(4) Phase IV.
 100. Kdn-2 221 Tr. E(5) Phase IV ;

ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA

Fragment of distal end of humerus :

- | | |
|-------------------------------------|-------------------------------------|
| 104. Kdn-2 1 Tr. A(2) Phase V ; | 111. Kdn-2 9 Tr. A(2) Phase V ; |
| 105. Kdn-2 45 Tr. B(5) Phase IV ; | 112. Kdn-2 90 Tr. C(6) Phase III ; |
| 106. Kdn-2 94 Tr. C(6) Phase III ; | 113. Kdn-2 121 Tr. C(6) Phase III ; |
| 107. Kdn-2 128 Tr. C(6) Phase III ; | 114. Kdn-2 131 Tr. C(6) Phase III ; |
| 108. Kdn-2 135 Tr. E(3) Phase V ; | 115. Kdn-2 253 Tr. E(6) Phase III ; |
| 109. Kdn-2 286 Tr. Z(7) Phase II ; | 116. Kdn-2 291 Tr. Z(7) Phase II ; |
| 110. Kdn-2 293 Tr. Z(7) Phase II ; | 117. Kdn-2 327 Tr. Z(8) Phase II. |

Fragment of radius ulna :

- | | |
|-------------------------------------|-------------------------------------|
| 118. Kdn-2 68 Tr. B (7) Phase II ; | 122. Kdn-2 66 Tr. B(7) Phase II ; |
| 119. Kdn-2 116 Tr. C(6) Phase III ; | 123. Kdn-2 129 Tr. C(6) Phase III ; |
| 120. Kdn-2 272 Tr. Z(7) Phase II ; | 124. Kdn-2 292 Tr. Z(7) Phase II ; |
| 121. Kdn-2 320 Tr. Z(8) Phase II ; | 125. Kdn-2 337 Tr. Z(8) Phase II. |

Fragment of radius :

- | | |
|-------------------------------------|-------------------------------------|
| 126. Kdn-2 10 Tr. A(2) Phase V ; | 136. Kdn-2 65 Tr. B(7) Phase II ; |
| 127. Kdn-2 67 Tr. B(7) Phase II ; | 137. Kdn-2 69 Tr. C(3) Phase V ; |
| 128. Kdn-2 78 Tr. C(3) Phase V ; | 138. Kdn-2 80 Tr. C(3) Phase V ; |
| 129. Kdn-2 107 Tr. C(6) Phase III ; | 139. Kdn-2 125 Tr. C(6) Phase III ; |
| 130. Kdn-2 141 Tr. E(3) Phase V ; | 140. Kdn-2 199 Tr. E(4) Phase IV ; |
| 131. Kdn-2 149 Tr. E(3) Phase V ; | 141. Kdn-2 209 Tr. E(4) Phase IV ; |
| 132. Kdn-2 215 Tr. E(4) Phase IV ; | 142. Kdn-2 249 Tr. E(6) Phase III ; |
| 133. Kdn-2 266 Tr. Z(7) Phase II ; | 143. Kdn-2 277 Tr. Z(7) Phase II ; |
| 134. Kdn-2 294 Tr. Z(7) Phase II ; | 144. Kdn-2 299 Tr. Z(7) Phase II. |
| 135. Kdn-2 117 Tr. C(6) Phase III ; | |

Fragment of ulna :

- | | |
|------------------------------------|-------------------------------------|
| 145. Kdn-2 12 Tr. A(3) Phase V ; | 148. Kdn-2 178 Tr. E(3) Phase V ; |
| 146. Kdn-2 212 Tr. E(4) Phase IV ; | 149. Kdn-2 236 Tr. E(6) Phase III ; |
| 147. Kdn-2 271 Tr. Z(7) Phase II ; | 150. Kdn-2 287 Tr. Z(7) Phase II. |

Magnum : Naviculo-cuboid bone :

- | | |
|------------------------------------|------------------------------------|
| 151. Kdn-2 60 Tr. B(7) Phase II ; | 154. Kdn-2 144 Tr. E(3) Phase IV ; |
| 152. Kdn-2 166 Tr. E(3) Phase V ; | 155. Kdn-2 184 Tr. E(4) Phase IV. |
| 153. Kdn-2 309 Tr. Z(8) Phase II ; | |

Uncinate :

156. Kdn-2 130 Tr. C(6) Phase III.

Fragment of proximal end of metacarpals :

- | | |
|-------------------------------------|-------------------------------------|
| 157. Kdn-2 15 Tr. B(2) Phase V ; | 162. Kdn-2 21 Tr. B(2) Phase V ; |
| 158. Kdn-2 42 Tr. B(5) Phase IV ; | 163. Kdn-2 86 Tr. C(4) Phase IV ; |
| 159. Kdn-2 103 Tr. C(6) Phase III ; | 164. Kdn-2 248 Tr. E(6) Phase III ; |
| 160. Kdn-2 288 Tr. Z(7) Phase II ; | 165. Kdn-2 312 Tr. Z(8) Phase II. |
| 161. Kdn-2 330 Tr. Z(8) Phase II ; | |

Fragment of metacarpals (distal end) :

- | | |
|------------------------------------|------------------------------------|
| 166. Kdn-2 93 Tr. C(6) Phase III ; | 173. Kdn-2 139 Tr. E(3) Phase V ; |
| 167. Kdn-2 145 Tr. E(3) Phase V ; | 174. Kdn-2 193 Tr. E(4) Phase IV ; |
| 168. Kdn-2 207 Tr. E(4) Phase IV ; | 175. Kdn-2 227 Tr. E(5) Phase IV ; |
| 169. Kdn-2 228 Tr. E(5) Phase IV ; | 176. Kdn-2 273 Tr. Z(7) Phase II ; |
| 170. Kdn-2 302 Tr. Z(7) Phase II ; | 177. Kdn-2 311 Tr. Z(7) Phase II ; |
| 171. Kdn-2 317 Tr. Z(8) Phase II ; | 178. Kdn-2 318 Tr. Z(8) Phase II ; |
| 172. Kdn-2 331 Tr. Z(8) Phase II ; | 179. Kdn-2 254 Tr. Z(7) Phase II. |

Fragment of pelvic girdle :

- | | |
|-------------------------------------|-------------------------------------|
| 180. Kdn-2 115 Tr. C(6) Phase III ; | 183. Kdn-2 133 Tr. C(6) Phase III ; |
| 181. Kdn-2 152 Tr. E(3) Phase V ; | 184. Kdn-2 165 Tr. E(3) Phase V ; |
| 182. Kdn-2 217 Tr. E(4) Phase IV ; | 185. Kdn-2 268 Tr. Z(7) Phase II. |

Fragment of proximal end of femur :

- | | |
|-------------------------------------|-------------------------------------|
| 186. Kdn-2 53 Tr. B(5) Phase IV ; | 189. Kdn-2 64 Tr. B(7) Phase II ; |
| 187. Kdn-2 127 Tr. C(6) Phase III ; | 190. Kdn-2 246 Tr. E(6) Phase III ; |
| 188. Kdn-2 256 Tr. Z(7) Phase II ; | 191. Kdn-2 280 Tr. Z(7) Phase II. |

Fragment of distal end of femur :

- | | |
|--|------------------------------------|
| 192. Kdn-2 101 Tr. C(6) Phase III ; | 195. Kdn-2 151 Tr. E(3) Phase V ; |
| 193. Kdn-2 245 Tr. E(6) Phase III
(charred) ; | 196. Kdn-2 275 Tr. Z(7) Phase II ; |
| 194. Kdn-2 301 Tr. Z(7) Phase II ; | 197. Kdn-2 335 Tr. Z(8) Phase II. |

Fragment of proximal end of tibia :

- | | |
|---|-------------------------------------|
| 198. Kdn-2 51 Tr. B(5) Phase IV ; | 204. Kdn-2 326 Tr. Z(8) Phase II ; |
| 199. Kdn-2 102 Tr. C(6) Phase III ; | 205. Kdn-2 61 Tr. B(7) Phase II ; |
| 200. Kdn-2 132 Tr. C(6) Phase III ; | 206. Kdn-2 113 Tr. C(6) Phase III ; |
| 201. Kdn-2 222 Tr. E(5) Phase IV
(charred) ; | 207. Kdn-2 164 Tr. E(3) Phase V ; |
| 202. Kdn-2 243 Tr. E(6) Phase III ; | 208. Kdn-2 238 Tr. E(6) Phase III ; |
| 203. Kdn-2 274 Tr. Z(7) Phase II ; | 209. Kdn-2 252 Tr. E(6) Phase III ; |
| | 210. Kdn-2 278 Tr. Z(7) Phase II. |

Fragment of distal end of tibia :

- | | |
|-------------------------------------|--|
| 211. Kdn-2 44 Tr. B(5) Phase IV ; | 218. Kdn-2 114 Tr. C(6) Phase III
(charred) ; |
| 212. Kdn-2 106 Tr. C(6) Phase III ; | 219. Kdn-2 163 Tr. E(3) Phase V ; |
| 213. Kdn-2 126 Tr. C(6) Phase III ; | 220. Kdn-2 244 Tr. E(6) Phase III ; |
| 214. Kdn-2 237 Tr. E(6) Phase III ; | 221. Kdn-2 289 Tr. Z(7) Phase II ; |
| 215. Kdn-2 265 Tr. Z(7) Phase II ; | 222. Kdn-2 325 Tr. Z(8) Phase II. |
| 216. Kdn-2 296 Tr. Z(7) Phase II ; | |
| 217. Kdn-2 62 Tr. B(7) Phase II ; | |

Fragment of metacarpals :

- | | |
|-------------------------------------|------------------------------------|
| 223. Kdn-2 111 Tr. C(6) Phase III ; | 226. Kdn-2 190 Tr. E(4) Phase IV ; |
| 224. Kdn-2 269 Tr. Z(7) Phase II ; | 227. Kdn-2 316 Tr. Z(8) Phase II. |
| 225. Kdn-2 329 Tr. Z(8) Phase II ; | |

Fragment of canon bone :

- | | |
|-------------------------------------|-------------------------------------|
| 228. Kdn-2 77 Tr. C(3) Phase V ; | 230. Kdn-2 240 Tr. E(6) Phase III ; |
| 229. Kdn-2 250 Tr. E(6) Phase III ; | 231. Kdn-2 231 Tr. E(5) Phase IV. |

ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA

Astragalus :

- | | |
|---|-------------------------------------|
| 232. Kdn-2 34 Tr. B(4) Phase IV ; | 240. Kdn-2 308 Tr. Z(8) Phase II ; |
| 233. Kdn-2 70 Tr. C(3) Phase V ; | 241. Kdn-2 57 Tr. B(7) Phase II ; |
| 234. Kdn-2 92 Tr. C(6) Phase III ; | 242. Kdn-2 91 Tr. C(6) Phase III ; |
| 235. Kdn-2 118 Tr. C(6) Phase III ; | 243. Kdn-2 97 Tr. C(6) Phase III ; |
| 236. Kdn-2 137 Tr. E(3) Phase V
(charred) ; | 244. Kdn-2 123 Tr. C(6) Phase III ; |
| 237. Kdn-2 173 Tr. E(3) Phase V ; | 245. Kdn-2 172 Tr. E(3) Phase V ; |
| 238. Kdn-2 214 Tr. E(4) Phase IV ; | 246. Kdn-2 202 Tr. E(4) Phase IV ; |
| 239. Kdn-2 285 Tr. Z(7) Phase II
(charred) ; | 247. Kdn-2 255 Tr. Z(7) Phase II ; |
| | 248. Kdn-2 307 Tr. Z(8) Phase II. |

Calcaneum :

- | | |
|--|-------------------------------------|
| 249. Kdn-2 40 Tr. B(5) Phase IV ; | 255. Kdn-2 300 Tr. Z(7) Phase II ; |
| 250. Kdn-2 81 Tr. C(3) Phase V ; | 256. Kdn-2 59 Tr. B(7) Phase II ; |
| 251. Kdn-2 108 Tr. C(6) Phase III ; | 257. Kdn-2 96 Tr. C(6) Phase III ; |
| 252. Kdn-2 146 Tr. E(3) Phase V
(charred) ; | 258. Kdn-2 119 Tr. C(6) Phase III ; |
| 253. Kdn-2 156 Tr. E(3) Phase V ; | 259. Kdn-2 147 Tr. E(3) Phase V ; |
| 254. Kdn-2 239 Tr. E(6) Phase III ; | 260. Kdn-2 160 Tr. E(3) Phase V ; |
| | 261. Kdn-2 270 Tr. Z(7) Phase II. |

First phalanx :

- | | |
|------------------------------------|-----------------------------------|
| 262. Kdn-2 2 Tr. A(2) Phase V ; | 265. Kdn-2 35 Tr. B(4) Phase IV ; |
| 263. Kdn-2 142 Tr. E(3) Phase V ; | 266. Kdn-2 185 Tr. E(4) Phase IV. |
| 264. Kdn-2 225 Tr. E(5) Phase IV ; | |

Second phalanx :

- | | |
|-----------------------------------|------------------------------------|
| 267. Kdn-2 3 Tr. A(2) Phase V ; | 270. Kdn-2 52 Tr. B(5) Phase IV ; |
| 268. Kdn-2 87 Tr. C(4) Phase IV ; | 271. Kdn-2 170 Tr. E(3) Phase V ; |
| 269. Kdn-2 143 Tr. E(3) Phase V ; | 272. Kdn-2 124 Tr. C(6) Phase III. |

Third phalanx :

273. Kdn-2 17 Tr. B(2) Phase V.

Patella :

274. Kdn-2 136 Tr. E(3) Phase V.

Sub-family—Caprinae

Capra aegagrus (Gmelin) *race indicus*

Isolated molar teeth from upper jaw :

275. Kdn-2 74 Tr. C(3) Phase V.

Isolated molar teeth from lower jaw :

- | | |
|------------------------------------|------------------------------------|
| 276. Kdn-2 30 Tr. B(3) Phase V ; | 278. Kdn-2 264 Tr. Z(7) Phase II ; |
| 277. Kdn-2 304 Tr. Z(7) Phase II ; | 279. Kdn-2 204 Tr. E(4) Phase IV. |

Fragment of vertebra :

280. Kdn-2 195 Tr. E(4) Phase IV.

Fragment of rib :

281. Kdn-2 140 Tr. E(3) Phase V ; 282. Kdn-2 234 Tr. E(5) Phase IV.

Fragment of scapula :

283. Kdn-2 29 Tr. B(3) Phase V ; 285. Kdn-2 82 Tr. C(4) Phase IV
284. Kdn-2 206 Tr. E(4) Phase IV ; (charred).

Fragment of humerus (anterior end) :

286. Kdn-2 223 Tr. E(5) Phase IV.

Fragment of metacarpal :

287. Kdn-2 19 Tr. B(2) Phase V.

Fragment of femur (distal end) :

288. Kdn-2 210 Tr. () Phase IV.

Fragment of tibia fibula :

289. Kdn-2 47 Tr. B(5) Phase IV.

Fragment of tibia (anterior end) :

290. Kdn-2 72 Tr. C(3) Phase V ; 291. Kdn-2 54 Tr. B(5) Phase IV.

Fragment of metatarsal :

292. Kdn-2 36 Tr. B(4) Phase IV ; 294. Kdn-2 71 Tr. C(3) Phase V.
293. Kdn-2 297 Tr. Z(7) Phase II ;

Ovis vignei (Blyth) race domesticus

Isolated molar teeth from lower jaw :

295. Kdn-2 4 Tr. A(2) Phase V ; 297. Kdn-2 27 Tr. B(3) Phase V ;
296. Kdn-2 31 Tr. B(3) Phase V ; 298. Kdn-2 138 Tr. E(3) Phase V.

Fragment of rib :

299. Kdn-2 7 Tr. A(2) Phase V ; 300. Kdn-2 8 Tr. A(2) Phase V.

Fragment of scapula :

301. Kdn-2 24 Tr. B(2) Phase V.

Fragment of humerus (distal end) :

302. Kdn-2 189 Tr. E(4) Phase IV.

Fragment of metacarpal :

303. Kdn-2 22 Tr. B(2) Phase V ; 304. Kdn-2 171 Tr. E(3) Phase V.

ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA

Fragment of pelvic girdle :

305. Kdn-2 18 Tr. B(2) Phase V.

Fragment of femur :

306. Kdn-2 161 Tr. E(3) Phase V.

Fragment of tibia :

307. Kdn-2 46 Tr. B(5) Phase IV.

Fragment of metatarsal :

308. Kdn-2 6 Tr. A(2) Phase V.

First phalanx :

309. Kdn-2 5 Tr. A(2) Phase V.

Family—Cervidae

Cervus duvaucelli (cuvier)

Fragment of antler :

310. Kdn-2 75 Tr. C(3) Phase V (charred).

Fragment of upper jaw with molar teeth :

311. Kdn-2 89 Tr. C(6) Phase III ; 313. Kdn-2 109 Tr. C(6) Phase III.
312. Kdn-2 232 Tr. E(5) Phase IV ;

Family—Suidae

Sus Cristatus (Wagner) var *domesticus* (Rolleston)

Fragment of upper jaw with molar teeth :

314. Kdn-2 211 Tr. E(4) Phase IV ; 315. Kdn-2 219 Tr. E(5) Phase V.

Fragment of lower jaw with molar teeth :

316. Kdn-2 95 Tr. C(6) Phase III.

Fragment of lower jaw with pre-molar teeth :

317. Kdn-2 158 Tr. E(3) Phase V.

Isolated pre-molar tooth :

318. Kdn-2 159 Tr. E(3) Phase V.

Fragment of humerus :

319. Kdn-2 182 Tr. E(3) Phase V.

Fragment of tibia :

320. Kdn-2 154 Tr. E(3) Phase V.

Fragment of second metacarpal :

321. Kdn-2 157 Tr. E(3) Phase V.

Order—Carnivora

Family—Canidae

Canis familiaris Linn*Fragment of right lower jaw with pre-molar and molar teeth :*

322. Kdn-2 194 Tr. E(4) Phase IV.

Fragment of long bones :

- | | |
|-------------------------------------|-------------------------------------|
| 323. Kdn-2 13 Tr. A(3) Phase V ; | 328. Kdn 2 14 Tr. A(3) Phase V ; |
| 324. Kdn-2 26 Tr. B(3) Phase V ; | 329. Kdn-2 27 Tr. B(3) Phase V ; |
| 325. Kdn-2 48 Tr. B(5) Phase IV ; | 330. Kdn-2 63 Tr. B(7) Phase II ; |
| 326. Kdn-2 79 Tr. C(3) Phase V ; | 331. Kdn-2 120 Tr. C(6) Phase III ; |
| 327. Kdn-2 241 Tr. E(6) Phase III ; | 332. Kdn-2 336 Tr. Z(8) Phase II. |

Bone unidentified :

333. Kdn-2 153 Tr. E(3) Phase V.

CONCLUSION

From the study of these bones it could be stated that a large number of them belong to the domesticated animals and a few to other wild animals. Again it is interesting to note that unlike the bones from Ahar, it comprises of long bones i.e. limb bones. At Navdatoli fairly good collections of jaws with teeth and isolated teeth were presented and the limb bones were very few.

There is a small number of bones of deer and pig. Carapace of turtle is also present. This collection also includes an isolated molar tooth from the upper jaw of an elephant.

Some of the bones of *Bos* have been burnt which would indicate that these animals might have been killed for religious sacrifice or for food. Presence of large number of bones of *Bos indicus* suggests that the inhabitants of that place were either cattle-breeders or mixed farmers. There are no horn cores of cows, goat or sheep.

The results of the *identification* of the animals are tabulated below :

Phase	Associations		Names of animals
VI	Muslim and Later (1500-1800 A.D.) ..	....
V	Later Satavahana ..	..	Cows, Goat, Sheep, Pig, Deer.
IV	Satavahana ..	..	Turtle, Ass, Cow, Goat, Sheep, Deer, Pig, Dog.
III	Mauryan ..	..	Elephant, Cow, Deer, Pig.
II	Megalithic and Pre-Mauryan ..	..	Cow, Goat.
I	Pre-Historic ..	..	(bar —).

ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA

This table indicates an environment with patches of areas used for grazing tamed animals with a possibility of park-land type features which might have maintained the wild life. This is represented by the deer. The elephant might have been a tamed one. It might have been brought from some jungles.

The presence of cow and goat from the Megalithic culture suggests that the goat especially was already browsing on the pastures around Kaundinyapura. The turtle might have been obtained from the nearby river. The bones of horse were not recovered probably due to the limited nature of the excavations and due to its rarity.

Thus the study of the animal remains suggests the existence of mixed farmers, who might be occasionally hunting the deer and capturing the turtle for food.

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ACKNOWLEDGEMENT

My grateful thanks are due to Dr. M. G. Dikshit for permitting me to study this material and Dr. R. N. Mehta for valuable suggestions and criticism during this study.

CLOTH-IMPRESSIONS

(Plate XXVII)

Pottery at Kaundinyapura was at times decorated by laying wet lumps of clay on the pot-surface and by pressing them with the thumb so as to give the effect of connected roundels. Occasionally cloth was employed for this purpose. Stray sherds from the Mauryan and Satavahana levels were picked up for the study of the impressions left by the cloth.

A sherd from the Mauryan level, Kdn-2 E (6), showed that one square inch of cloth accommodated 32 threads in the warp and 28 threads in the weft. Sample sherd from the Satavahana stratum showed 30 threads in the warp and 28 threads in the weft. In both the cases the cloth was found to be hand-spun Khaddar. The plys are not visible in the impressions.

The sherds selected for these measurements are illustrated on Plate XXVII.

INDEX

' A '

- Agastya, 2
- Ahar, 28, 33, 156
- Ahichchhatra, 35, 37, 106
 - Eye-beads at, 99
 - Votive-tank at, 108-109
- Aitareya Brahmana. 1
- Aja, 3
- Allan, John, 139
- Amaraoiti, 6, 29, 73, 129
- Ambe inscription, 6
- Amdapur, 6
- Anatolia, Eye-beads at, 100
- Animal remains, 148
- Anjanavati plate, 5
- Antimony rod, 16, 21
- Aramaic character, 102
- Arikamedu, Beads at, 89
 - Finial at, 111
 - Votive-tank at, 109
- Arthasastra of Kautilya, 4
- Asvalayana, 1

' B '

- Bagumra plates, 5
- Bahal, 28, 37, 108
- Bairat, 37
 - Rectangular roof tiles at, 110
- Bamboo, 140
- Banerji, Dr. N. R., 28, 74
- Bangad, Finial at, 111
 - Rectangular roof tiles at, 110
- Bangles, 21
 - Agate, 124
 - Bone, 124-125
 - Chalcedony, 124
 - Copper, 124-125
 - Glass, 124
 - Shell, 124
- Basarh, Rectangular roof tiles at, 110
- Beads, 19, 21, 85, 87
 - Agate, 16, 85, 92
 - Amethyst, 94
 - Areca-nut-shaped, 104-105
 - Bi-cone square, 86
 - Carnelian, 16, 85, 91
 - Copper, 103
 - Crystal, 16, 93-94
 - Double-axe, 89
 - Etched, 17, 35, 85, 88-90
 - Circular tabular, 88

' B '—contd.

- Beads, Etched, Long-barrel circular, 88
 - Tablet-shaped, 88
- Eye, 86, 98-101
- Eye-glass, 27
- Faience, 95-96
- Garnet, 94
- Ghata-shaped, 104-105
- Glass, 85-86, 98-102
- Gold, 103
- Jasper, 86, 92
- Lapis lazuli, 86, 92
- Necklace, 17
- Shell, 102-103
- Spherical, 89
- Square-barrel, 104
- Steatite Disc, 85
- Terracotta, 104-105
 - Crescent-shaped, 105
 - Cylinder circular, 104-105
 - Spherical, 104
- Tortoise-shaped amulet, 96-98
- Unfinished, 94-95
- Beck, H. C., 100-102
- Bel river, 7
- Besnagar, 106
 - Kohl-sticks at, 122
 - Punched-marked coins at, 136
- Bhadrakali, 4
- Bhargava, 1
- Bhesaga, *see* Bhishmaka
- Bhima, 1, 3
- Bhim Tekadi, 7, 11-12, 14, 19, 23, 85
- Bhishmaka, 2, 6, 9
- Bhita, 106
 - Finial at, 111
 - Rectangular roof tiles at, 110
 - Votive-tank at, 109
- Bhojas, 3, 4
- Bhoja Kata, 2-4
- Bhuinj, Rectangular roof tiles at, 110
- Bone, arrow-heads, 123
 - Bangles, 124-125
 - Combs, 21, 123
 - Pieces, 123
 - Points, 123
 - Stylii, 123
 - Surase, 123
 - Tools, 123
 - Torpedo-shaped object, 123
- Bopadeva, 6
- Bowl, 38, 57
 - Flat-bottomed, 37

INDEX

‘ B ’—concl'd.

- Bowl, Hand-made, 71
 - Rim, 77, 79
 - Vadga-shaped, 37
- Brahmagiri, 34, 50
 - Graffiti on pottery at, 74, 77
- Brahmapuri, Votive-tank at, 109
- Bricks, 21, 23
- Brick finial, 111
- Brihadaranyaka Upanishad, 1
- Brihat-samhita, 4

‘ C ’

- Cereals, 140
- Chambal, 145
- Chambu, 66
- Chammak plate, 4
- Chandrabhaga, 4
- Chandravalli, 29, 73
- China, Eye-beads at, 101
- Chitrassen, 3
- Chronology, 28-29
- Chudamani, 7
- Coimbatore, 29
- Coins, 19, 134
 - Copper, 16
 - Nagari punch-marked, 136
 - Square, 136-137
 - Die-struck, 135, 137
 - Karshapana, 135
 - Of Abdullah Qutb Shah, 139
 - Aurangzeb Alamgir, 139
 - Firoz Shah Bahmani, 138
 - Ghiyasuddin Tughluq, 137
 - Muhammad Bin Humayun, 138
 - Muhammad Shah I Bahmani, 138
 - Punch-marked, 16, 28
 - Copper, 135-136
 - Silver, 135
 - Un-inscribed, 135
- Copper Antimony rod, 121-122
 - Bangles, 121, 124
 - Bell, 120
 - Boss, 121
 - Cymbal, 121
 - Hook-shaped object, 121
 - Nail, 122
 - Pin, 121
 - Vessel rim, 122
 - Wire, 122
- Corsica, 102
- Crucibles, 17
 - For smelting silver, 112
- Crystal pendant, 21
- Cup, 37, 71
- Cyprus, 102

‘ D ’

- Dakshinapatha, 1
- Damana, 3
- Damayanti, 3
- Dandakas, 2
- Degraissants, 33, 38, 48, 50
- Deoli grant, 5
- Devnimori, 73
- Devurvada, 1
- Dhepa, 21
- Dikshit, Dr. M. G., 140, 144, 157
- Dish, 37, 52, 54, 59, 77, 79

‘ E ’

- Ear plug, 125
 - Glass, 127-128
 - Jasper, 127
 - Terracotta, 128
- reels, 26
- Eisen, G., 100-101
- Etruscan tombs, 102

‘ F ’

- Florence, 101

‘ G ’

- Gajamukha Pranali, 106
- Geru paint, 40
- Ghosh, A., 35
- Gilund, 28
- Glass, 29
 - Discs, 26
- Gode, Prof. P. K., 144
- Govinda III, 5

‘ H ’

- Harappa, Graffiti on pottery at, 76
- Harivamsa, 4
- Hastinapura, 12, 122
 - Iron hoe at, 120
 - Votive-tank at, 108-109
- Hemadri, 6
- Hyksos, Eye-beads at, 101

‘ I ’

- Indra II, 5
- Indumati, 3
- Iron arrow-heads, 113, 120
 - fish-shaped, 113
 - leaf-shaped, 113

INDEX

' I '—contd.

Iron balance beam, 115
 billets, 26
 chain, 115
 chauri handle, 119
 chisel, 113, 119
 daggers, 113
 eight-shaped link, 120
 hoe-shaped object, 120
 javelin, 119
 knife blade, 119
 L-shaped bolt, 115
 leaf-shaped blade, 115, 119
 nails, 117
 narani, 115
 pans, 120
 pin, 113
 ring, 120
 rod, 115
 spout like object, 115
 swords, 113
 blade, 115
 tongs, 113
 weapons, 26

' J '

Jar covers, 48, 50, 71, 72
 Jayamagha, 2
 Jhanjha, 121
 Jharika grant, 5
 Jujube, 140
 Jumna, 145

' K '

Kabul, 102
 Kalachuri Krishnaraja, 5
 Kamlapur, 117
 Kamasutra, 121
 Kandahar, 102
 Karad, 37, 108
 Rectangular roof tiles at, 110
 Kasia, Finial at, 111
 Kasrawad, Punch-marked copper coins at, 136
 Kaundinyapura, 1, 3-7, 9-14, 16-17, 19, 21, 26-29, 32-37,
 44-45, 57, 66, 71-74, 77, 81, 85-86, 88-89,
 91-97, 102, 106, 109-110, 112, 117, 120,
 123, 125, 130-135, 140, 142-144, 148
 Kausambi, 28, 35
 Kausika, 2
 Khare, Prof. D. C., 112
 Khokhrakot, 145
 Kholapura, 6
 Kholapura, 6
 Kholesvara, 6
 Khubagaon, 21

' K '—contd.

Kolhapur, 37, 144
 Rectangular roof tiles at, 110
 Stone querns at, 130
 Kondapur, 104
 Finial at, 111
 Punch-marked silver coins at, 135
 Kosam, 37
 Beads at, 89, 100
 Ear-plugs at, 129
 Kratha, 2
 Krishna Lord, 1-2
 Krishna III, 5
 Kshudra kinkinis, 120
 Kumrahar, 111
 Copper salakas at, 122
 Kundal, Rectangular roof tiles at, 110
 Kunnatur, Graffiti on pottery at, 74
 Kupgal, Beads at, 89
 Kurha, 19
 Kuta Kallu, Beads at, 89

' L '

Lal, B. B., 76
 Lamp, Fragment of, 71
 Legumes, 140, 142, 145
 Lohara grant, 5
 Lopamudra, 2
 Lothal, 33
 Lo Yang, 101

' M '

Machalas, 1
 Madhunadi, 4, 7
 Mahabharata, 2, 4
 Maheswara, 106, 122
 Legged querns at, 130
 Rectangular roof tiles at, 110
 Maize, 140, 142, 144
 Makarmukha Pranali, 106
 Malayavati, 121
 Mangrul, Punch-marked silver coins at, 135
 Manucci, Nicolas, 117
 Manyakheta, 5
 Markandeya Purana, 2
 Markandi, 6
 Marshall, John, 108-109, 121-122
 Maski, 34
 Beads at, 89
 Graffiti on pottery at, 74
 Mastya Purana, 2
 Mathura, 3, 37
 Megasthenes, 117
 Mehta, Dr. R. N., 157
 Mettur Dam, Beads at, 89
 Mica, 33, 46, 48, 71-72, 79, 84

INDEX

'M'—contd.

Montappalle, Beads at, 89
Morshi, 7
Multai plate, 5
Muslim building, 14, 23, 32, 37

'N'

NBP Ware, 16, 27-28, 32, 35
Nagarjunkonda, Votive-tanks at, 109
Nagda, Ear-plugs at, 129
Nagnajit, 1
Nala, 3
Nala Champu, 5
Nalanda, 144
 Locks at, 115, 117
Nala Sopara, Votive-tank rim at, 109
Nandgaon, 6
Nandivardhana, 4
Nannaraja Yudhasura, 5
Nasik, 28-29, 37, 45, 108
 Bone-points at, 123
 Khol-sticks at, 122
 Rectangular roof tiles at, 110
Navadatoli, 145, 156
Nayadharma Katha, 6
Neolithic chisel, 26
Nevasa, 29, 37, 66, 108
 Kohl-sticks at, 122
 Legged-querns at, 130
 Rectangular roof tiles at, 110
 Votive-tank at, 109
Neuberg, F., 100
Nuzi, 109

'P'

Pajjuma, *see* Pradyumna
Paithan, Rectangular roof tiles at, 110
Palestine, 100
Palghat, Beads at, 89
Panati, 37
Panchmahal, 28
Paravai, Beads at, 89
Pataliputra, Punch-marked copper coins at, 136
Patna, 111
Payoshni, 5
Peas, 140
Pendha, *see* Dhepa
Petrie, W. M. F., 101
Pise Work, *see* Dhepa
Pompeii, 117
Porkalam, Beads at, 89
Pot-sherds, 17
Pottery, 32-73
 Black and red, 27, 32, 35
 Globular, 73
 Graffiti on, 74-84

'P'—contd.

Pottery, Graffiti on Arrow-head mark, 74, 79, 81, 83
 Banner, 74, 81
 Bow and arrow, 74, 81
 Bullock-cart mark, 74
 Crescent mark, 77
 Cross mark, 74, 79, 81, 83-84
 Double-axe mark, 79
 Fish mark, 79
 Floral pattern, 84
 GA mark, 83
 K mark, 81
 Ladder mark, 74, 77
 Line mark, 79, 81, 83
 MA mark, 84
 Rising sun mark, 74, 81
 Swastika mark, 83
 T.A. mark, 83
 Taurus mark, 84
 Tree mark, 83
Muslim, 14
Painted, 16, 72-73
Paints used on, 171
 Red and Black, 28
Prabhas Patan, 125, 129
Pradyumna, 6
Prakashe, 29, 124
 Ear-plugs at, 129
 Legged-querns at, 130
Prasna Upanishad, 1
Pravarasena, 4

'Q'

Qau, 101

'R'

Rairh, 37
 Copper antimony rods at, 122
 Finial at, 111
 Rectangular roof tiles at, 110
 Votive-tank at, 109
Rajasekhara, 5
Rajghat, 35, 106
 Eye-bead at, 99-100
Ramadurga, 4
Ramchandra, 6
Ramatirtham, Finial at, 111
Ramtek, 6
Rangmahal, 73
Ranjala, 50, 52
Ranjan, 41
Rashtrakuta, 5
Relic-casket, 86
Rewa, 4
Rice, 140, 144

INDEX

' R '—contd.

- Rukmi, 2
 - Rukmini, 1-2, 6, 9
 - Temple of, 9-11
 - Rupar, 12, 33
 - Ruppini, *see* Rukmini
 - Russet-coated Andhra ware, 73
- ## ' S '
- Sadaram Baba, 10
 - Sambhar, 37
 - Finial at, 111
 - Votive-tank at, 109
 - Sanchi, 106, 144
 - Locks at, 115, 117
 - Rectangular roof tiles at, 110
 - Sanganakallu, Beads at, 89
 - Sanglood plate, 5
 - Sankalia, Dr. H. D., 144
 - Sanur, 34
 - Beads at, 89
 - Graffiti on pottery, 74
 - Satapatha Brahmana, 1
 - Saundararajan, 28
 - Seligman, 101
 - Sengmedu, graffiti on pottery, 74
 - Shah, Dr. (Mrs.) D. R., 148
 - Shell bangles, 123-124
 - rings, 123
 - stopper, 123
 - Sirkap, 106, 117, 122
 - Copper antimony rod at, 121
 - Eye-beads at, 99
 - Votive-tank at, 108
 - Sirpur, 37, 117, 144
 - Locks at, 115
 - Sisvai grant, 5
 - Skanda Purana, 2
 - Soak-well, 11-12
 - Sokage well, 26
 - Soutakkeny burials, 35
 - Spindle whorls, 111
 - Spout, 71, 106
 - Stravasti, Eye-beads at, 99
 - Stone ball, 131
 - Stone dabber, 131
 - grinding slab, 130
 - jeweller's weight, 132
 - mullers, 130-131
 - neolithic chisel, 132-133
 - pivots, 131
 - plaque, 131
 - querns, 130
 - tool sharpener, 131
 - Surat, 111

' T '

- Tatamka, 125, 129
- Taxila, 86, 101-102, 104, 117, 121-122, 132
 - Ear-plugs at, 129
 - Eye-beads at, 86, 99-100
 - Punch-marked copper coins at, 136
 - Shell-beads at, 102
 - Terracotta rectangular tablet at, 106
 - Votive-tank at, 108-109
- T. Nassipur, graffiti on pottery at, 74
- Tekewada burials, 35
- Ter, 108
 - Rectangular roof tiles, 110
 - Shell-bangle industry at, 123
 - Votive-tank at, 109
- Terracotta die, 23
 - objects, 106-113
 - horse-head, 106
 - ram-head, 106
 - rectangular tablet, 106
 - roof tiles, 110-111
 - water vessel, 106
 - seal, 21, 23, 134-135
- Thaper, B. K., 34, 74, 76
- Thavaka, *see* Panati
- Thavaka vessel, 14
- Thebes, Eye-beads at, 101
- Thevenot, 111
- Tomba della stramiera, 101
- Trivikrama, 6
- Trivikrama Bhatta, 5
- Tripuri, 37, 106
 - Copper antimony rod at, 122
 - Ear-plugs at, 129
 - Punch-marked copper coins at, 136

' U '

- Uchchhishtha, 37
- Udumbarapankti, *see* Amaraoti
- Ujjain, 102, 106
 - Beads at, 85
 - Ear-plugs at, 129
 - Eye-beads at, 99
 - Finial at, 111
 - Punch-marked copper coins at, 136
 - Votive-tank at, 109

' V '

- Vajaris, 108
- Vaisali, 106, 132
 - Copper rods at, 122
- Vallalur, beads at, 89
- Varahamihira, 4
- Varada river, 1, 5-7, 9, 19

INDEX

' V '—contd.

Vasishthiputra, Pulumavi, 4
Vasudeva Hindi, 6
Vatsagulma, 3, 6
Vatsyayana, 121
Vayupurana, 2
Vedabha Jataka, 2
Vedabho, 2
Vedapada, 6
Verulamium, Locks at, 117
Vessel, 39
 Gadu-shaped, 38
 Ghada-shaped, 40, 44
 Hand-made, 71
 Handi-shaped, 40
 Round-bottomed, 40
Vidarbha, 1-7, 28
Vidarbhi Kaundinya, 1
Viddha-sala-bhanjika, 5
Vishnu-Mittre, 140

' V '—concl.

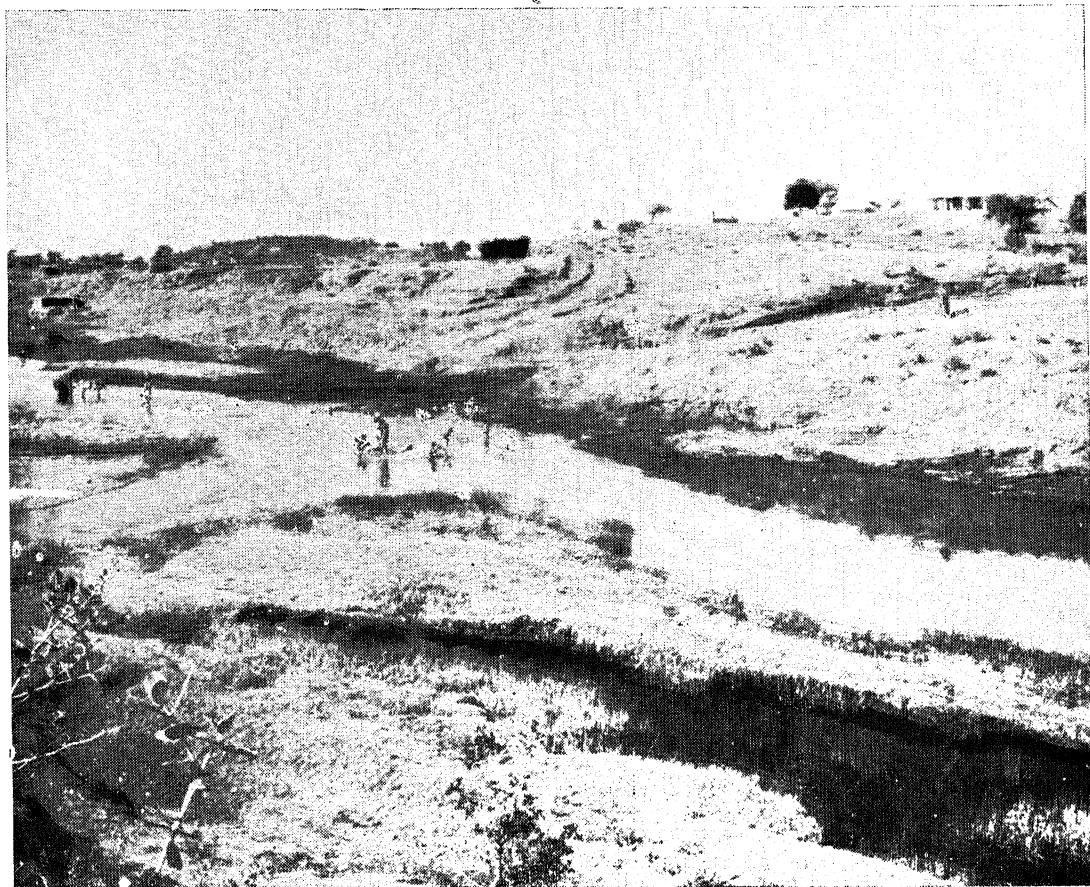
Visvamitra, 3
Vrishabha, 2
Votive tanks, 108-109

' W '

Wardha river, *see* Varada
Wheeler, Dr. R. E. M., 28, 76, 117
Whitehead, R. B., 139
Wynaad, 89

' Y '

Yadavas of Devgiri, 5
Yadu family, 3
Yama-pukur-brata, 108
Yamuna, 3
Yashodhara, 121
Yazadani, Dr. G., 76



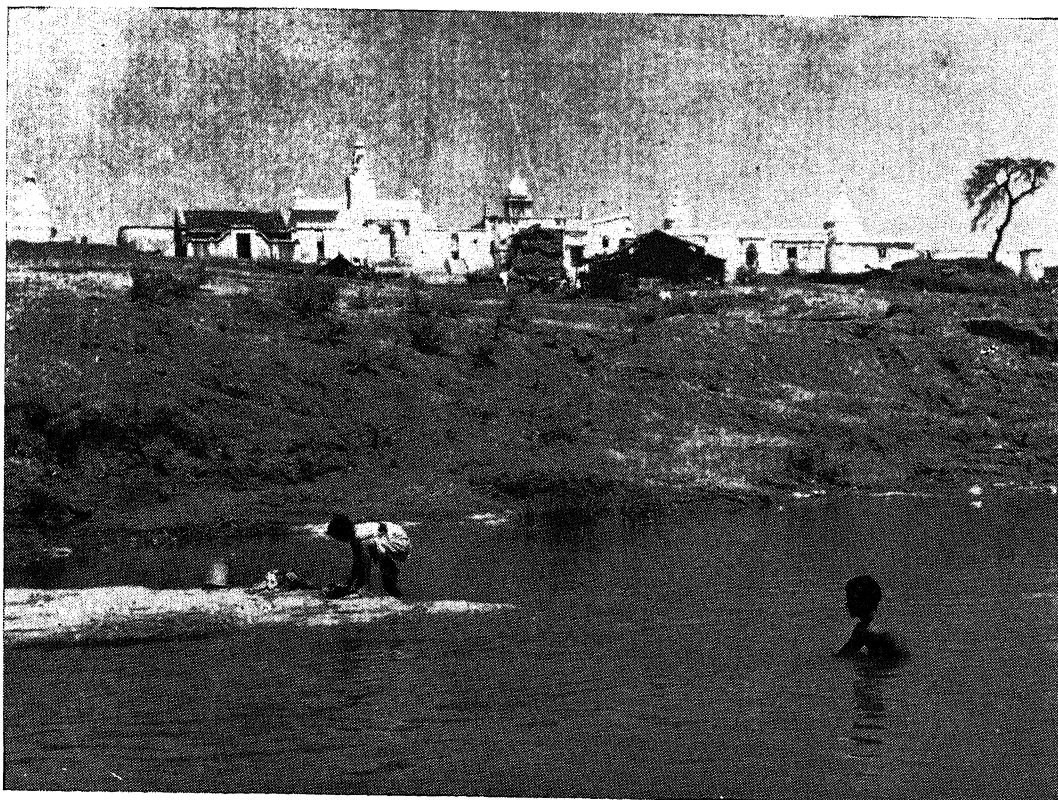
A. Site General View of Kaundinyapura



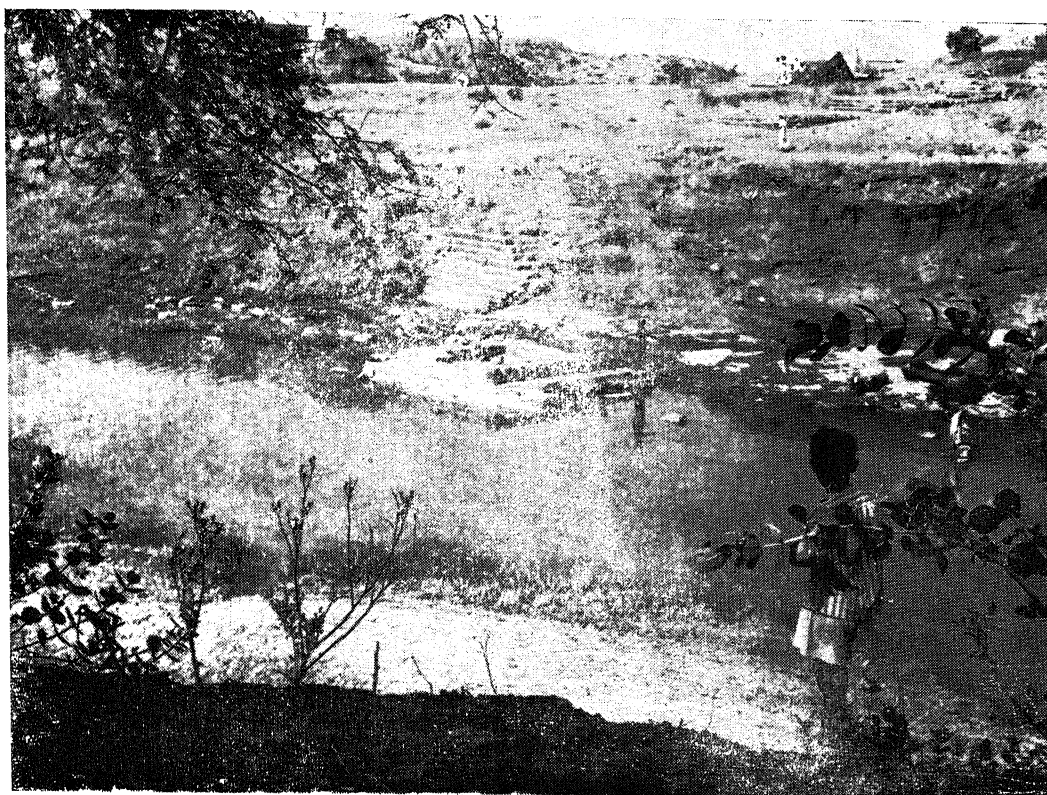
B. The Rukmini Temple from Bhim Tekdi



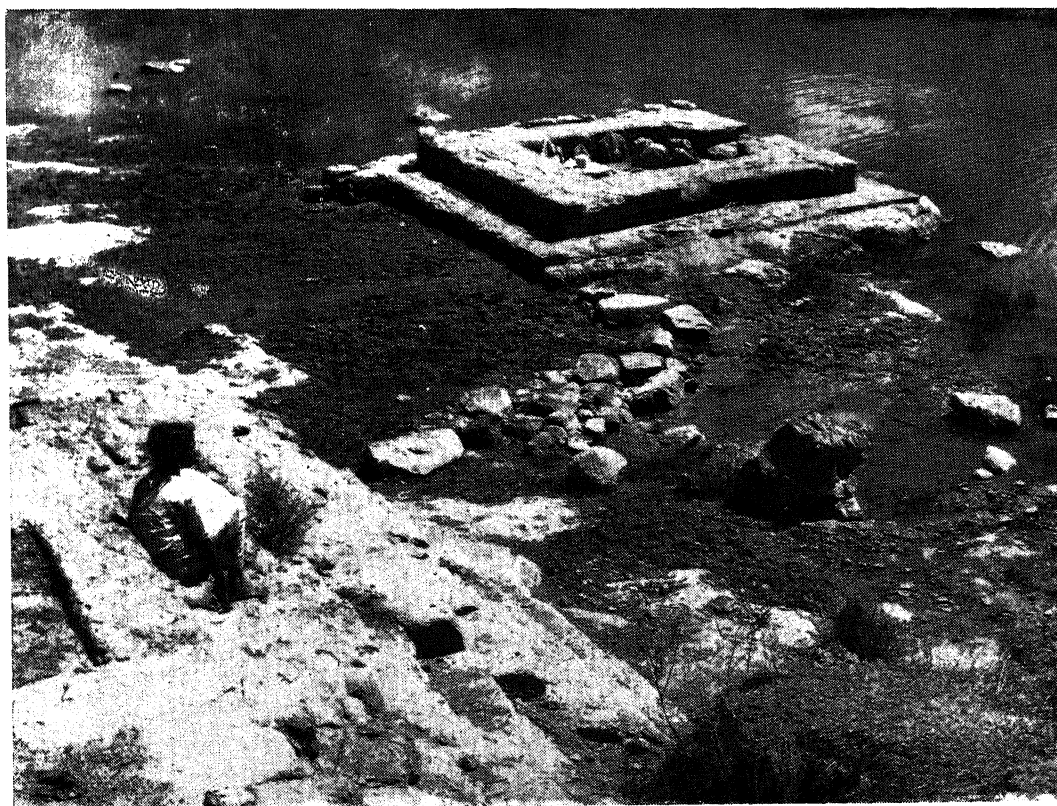
A. The Rukmini Temple



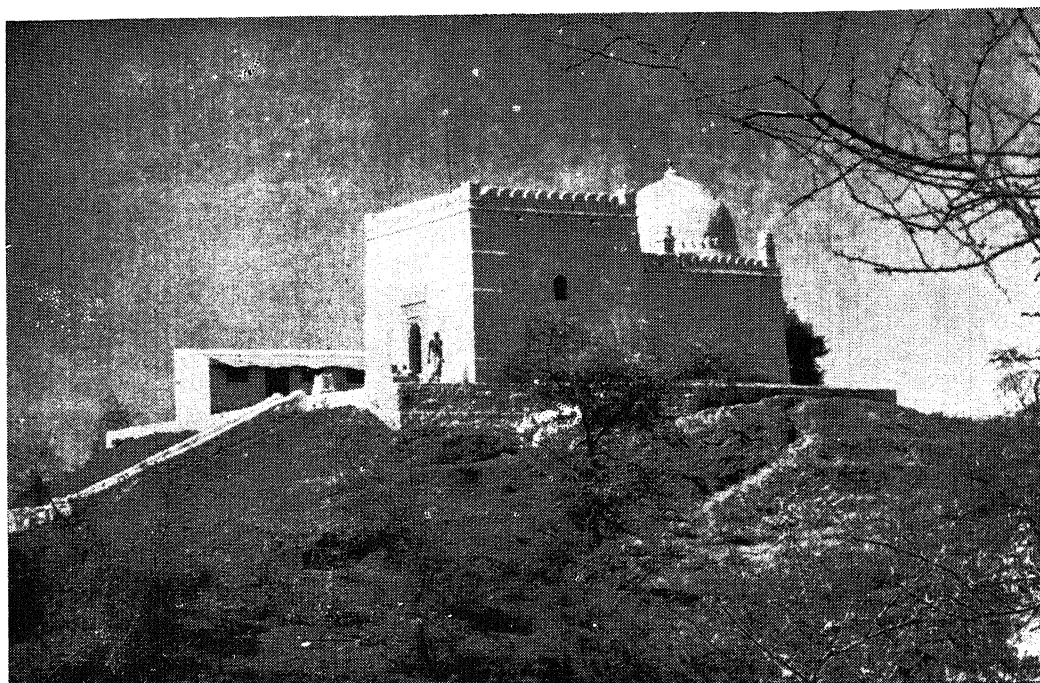
B. Temples from the river-bed



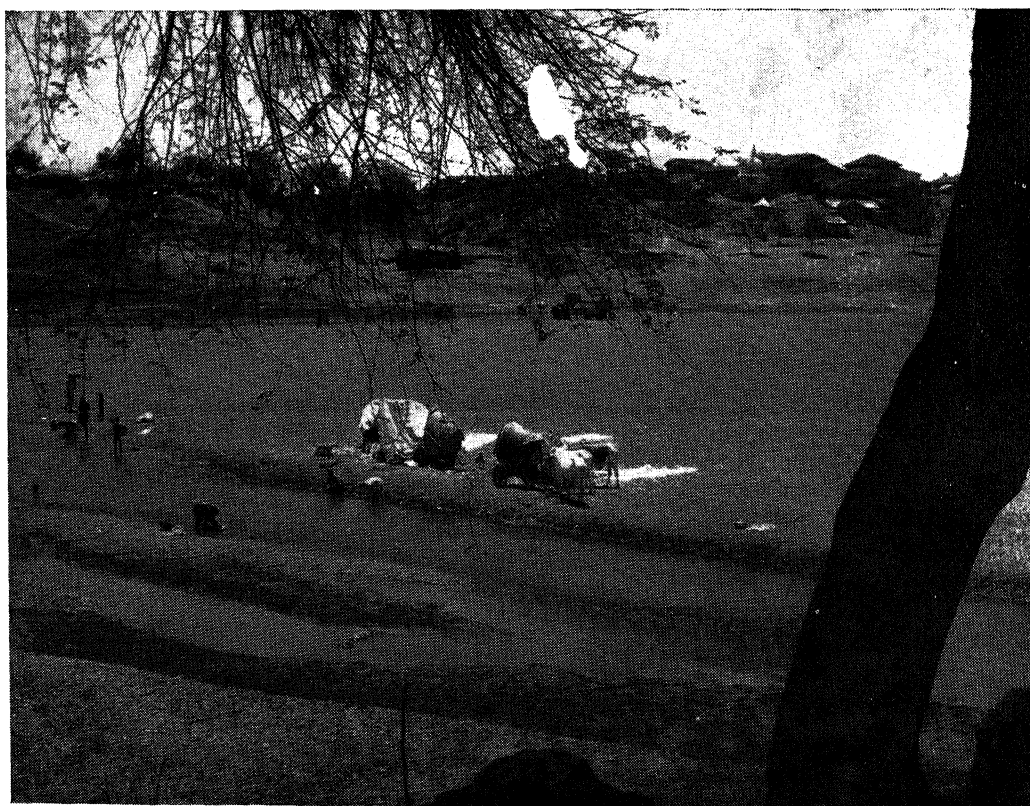
A. Ghat and Kunda in the river-stream



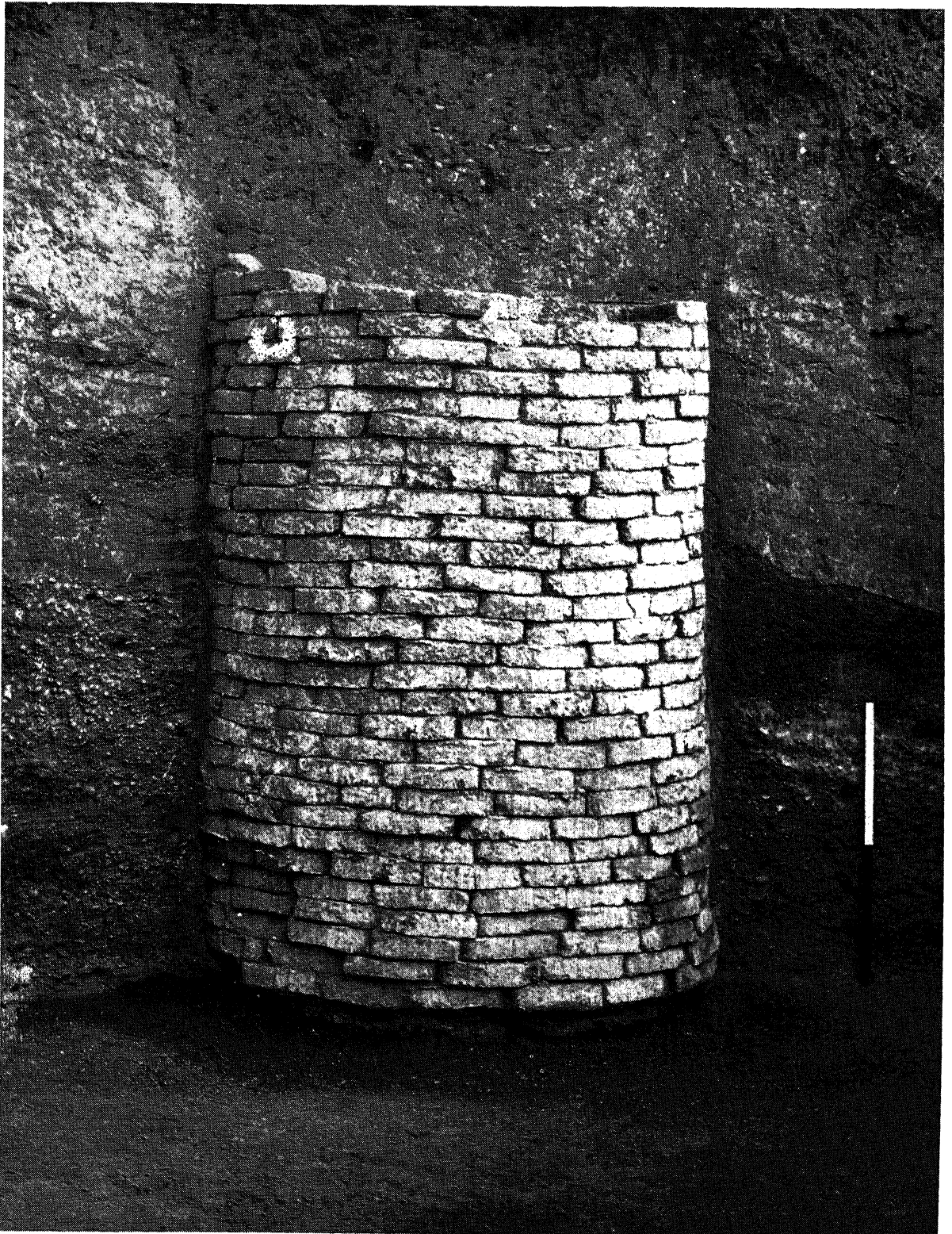
B. The Kunda from the Ghat



A. The Devi Temple from North



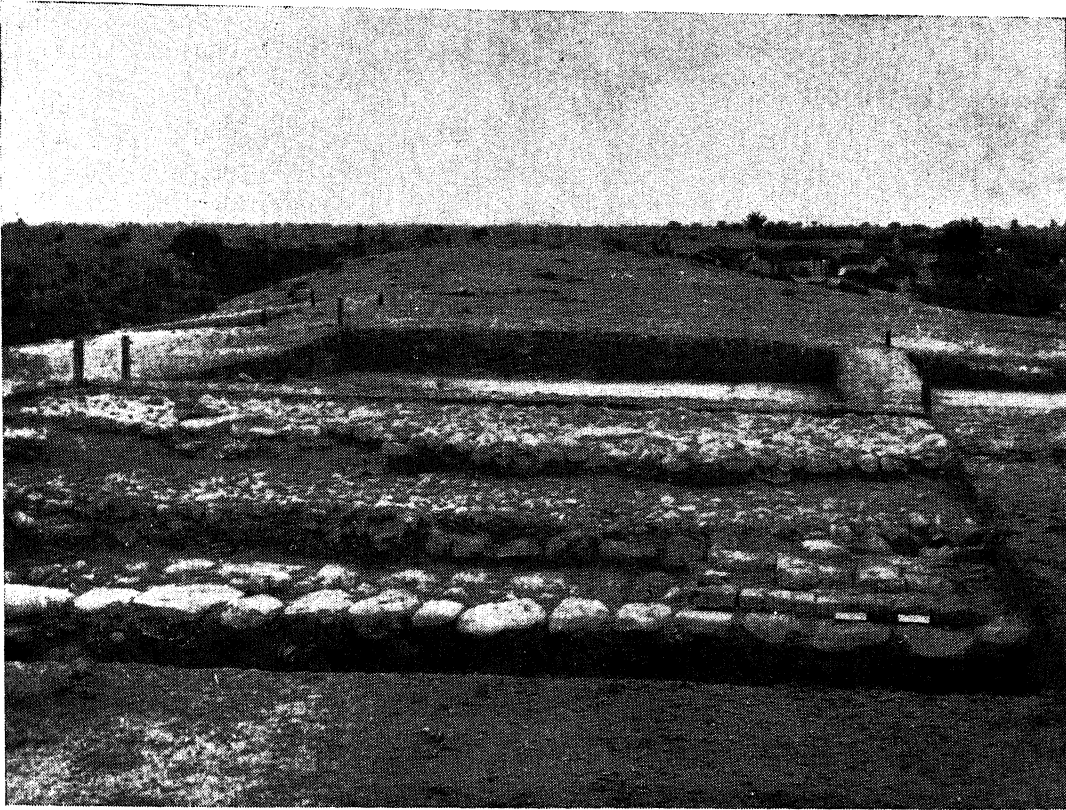
B. The Wardha river overlooking Deurwada (mark the sand bars and islands in the river-bed)



The soak-well



Corner of Muslim building showing boulder foundation



A. Muslim building showing two layers of rubble base for the floor



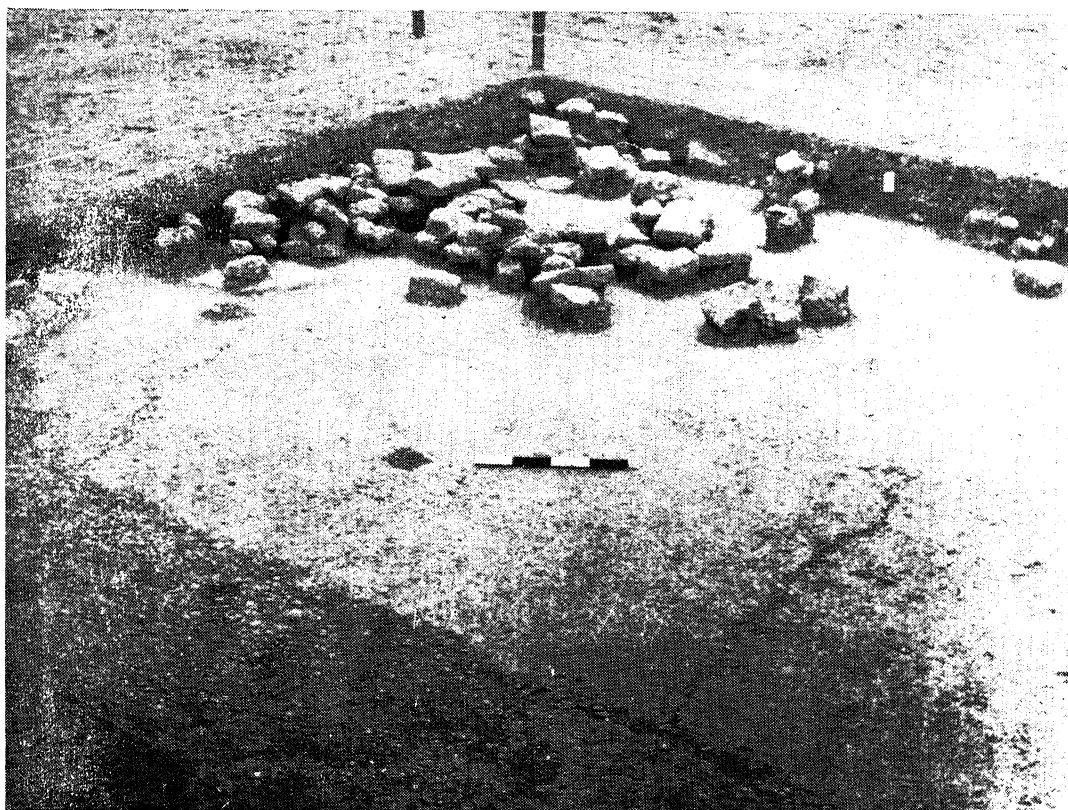
B. Muslim building showing brick wall over boulder foundations and rubble base for floor



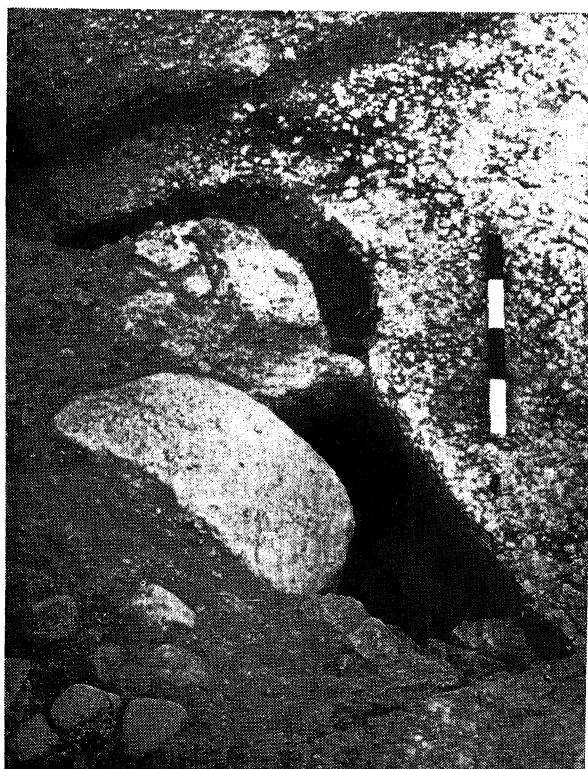
A. Corner of the Muslim building



B. Pottery pit below the chunam-floor of Muslim building



A. Muslim building : Chuman-floor with brick-bats (mark the partition line of rooms)



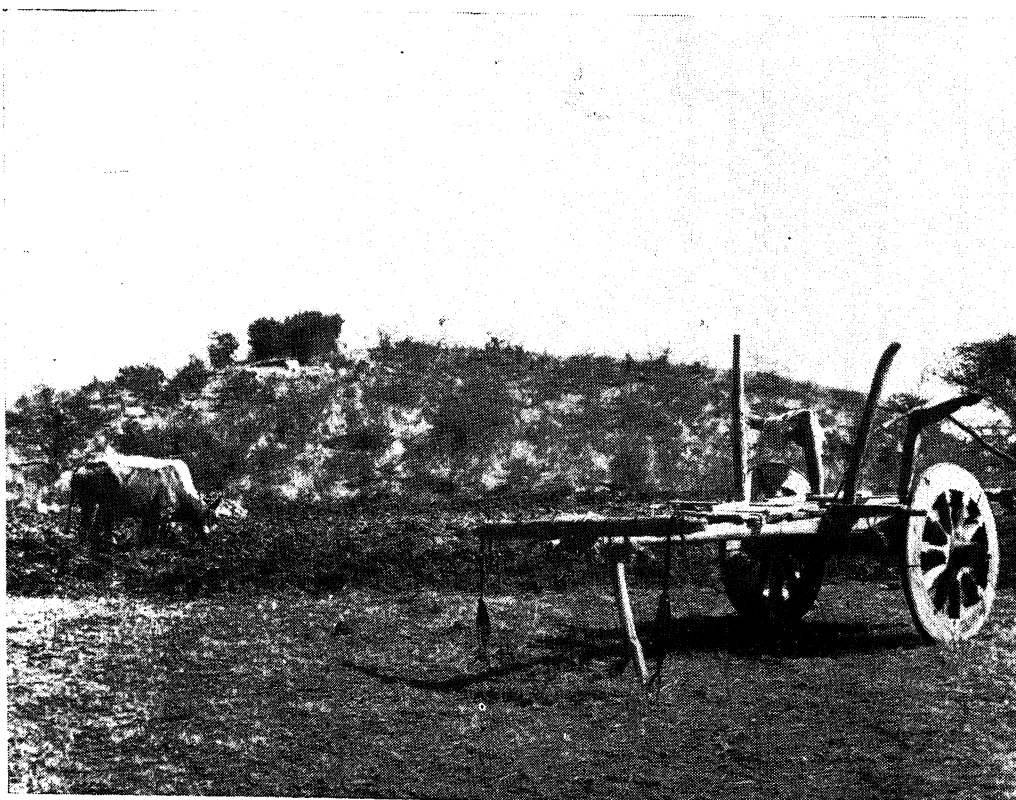
B. Muslim building : Foundation of Phase II made by breaking earlier chunam-floor.



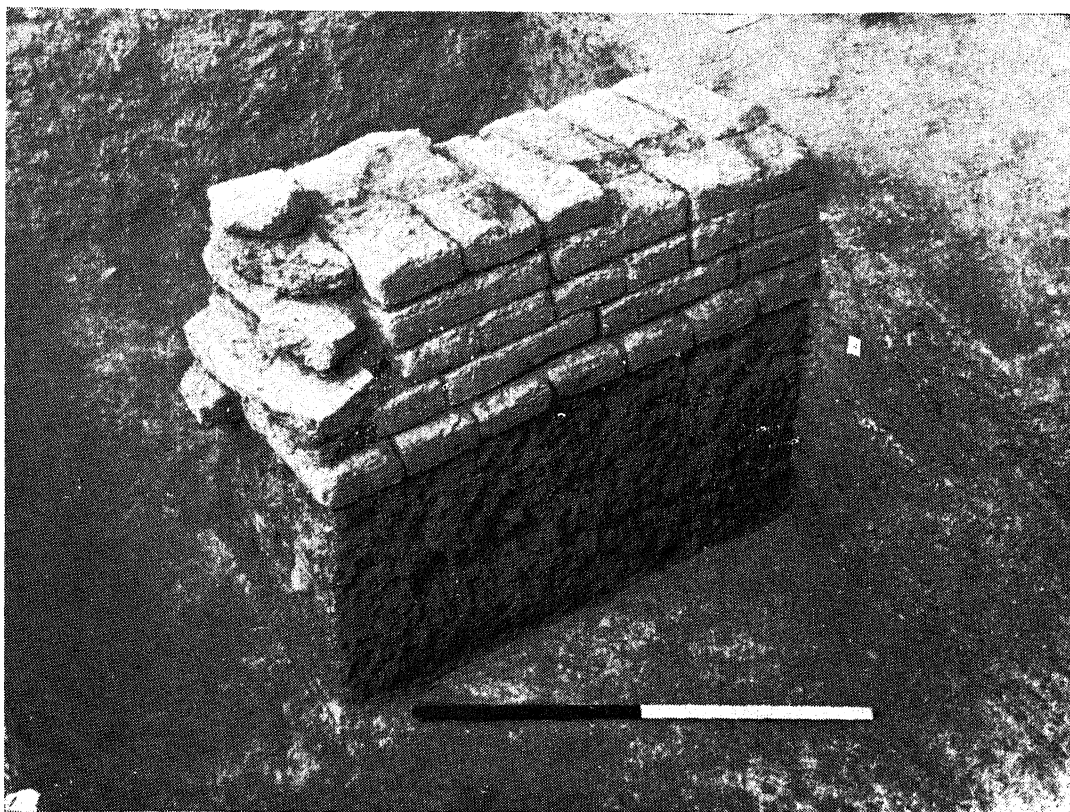
C. Trench D4 : Post-holes and remains of a charred wooden log.



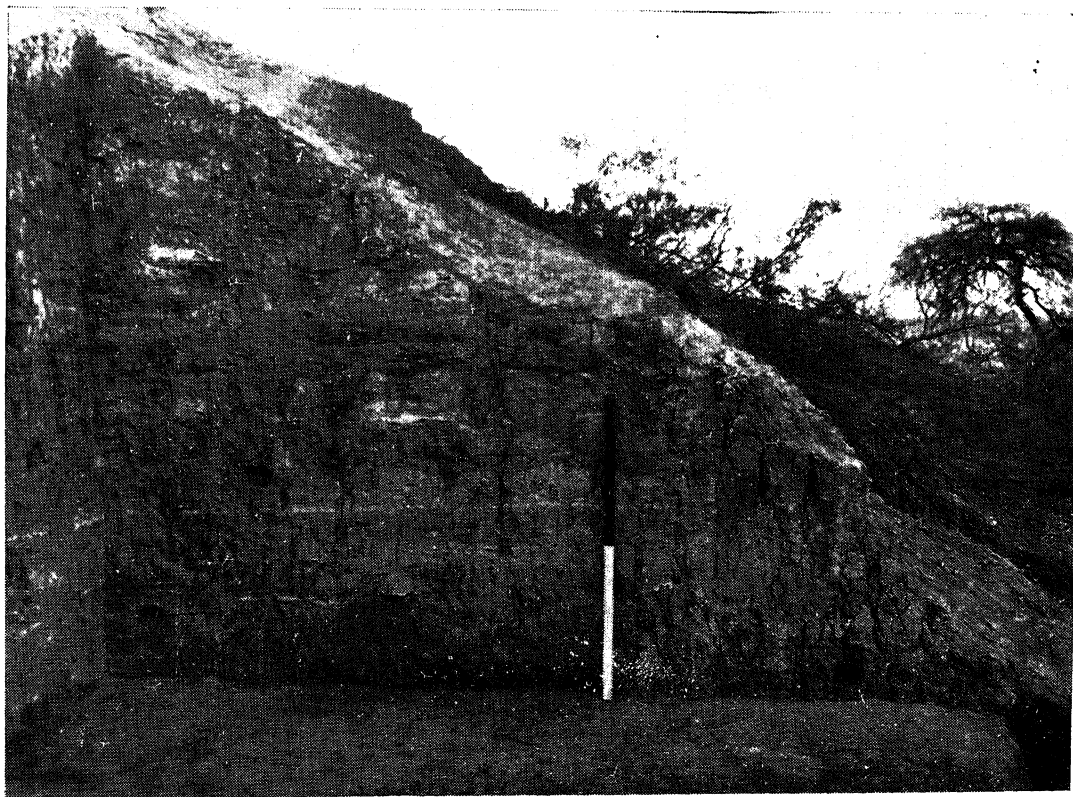
A. Mound Kdn. 2 : General view from south



B. Mound Kdn. 2 : General view from west



A. Site Kdn. 2, Trench A : Corner wall of a brick structure



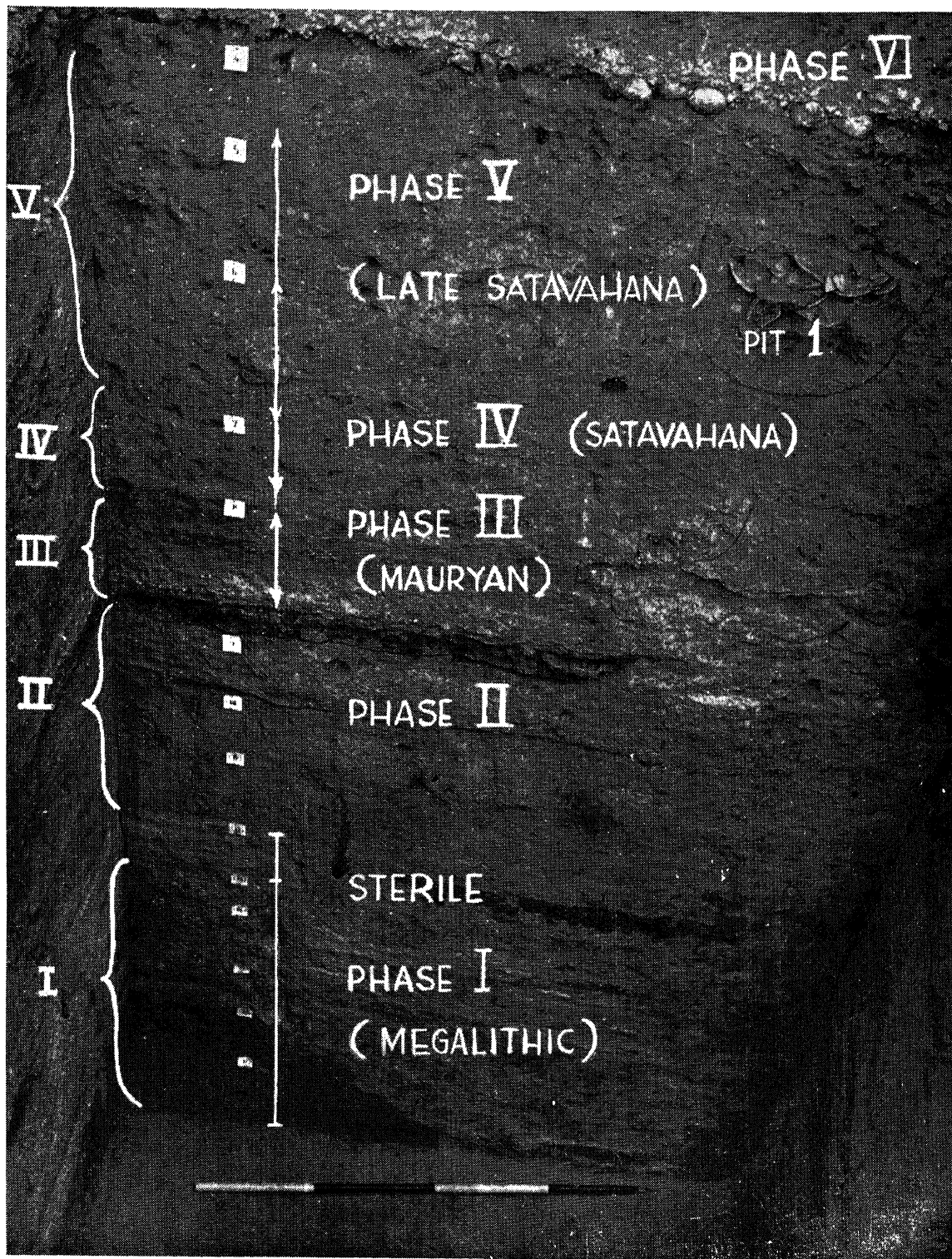
B. Kdn. 2, Trench C : General view of section showing the rampart



General view of the rampart trench excavated by step-trenching



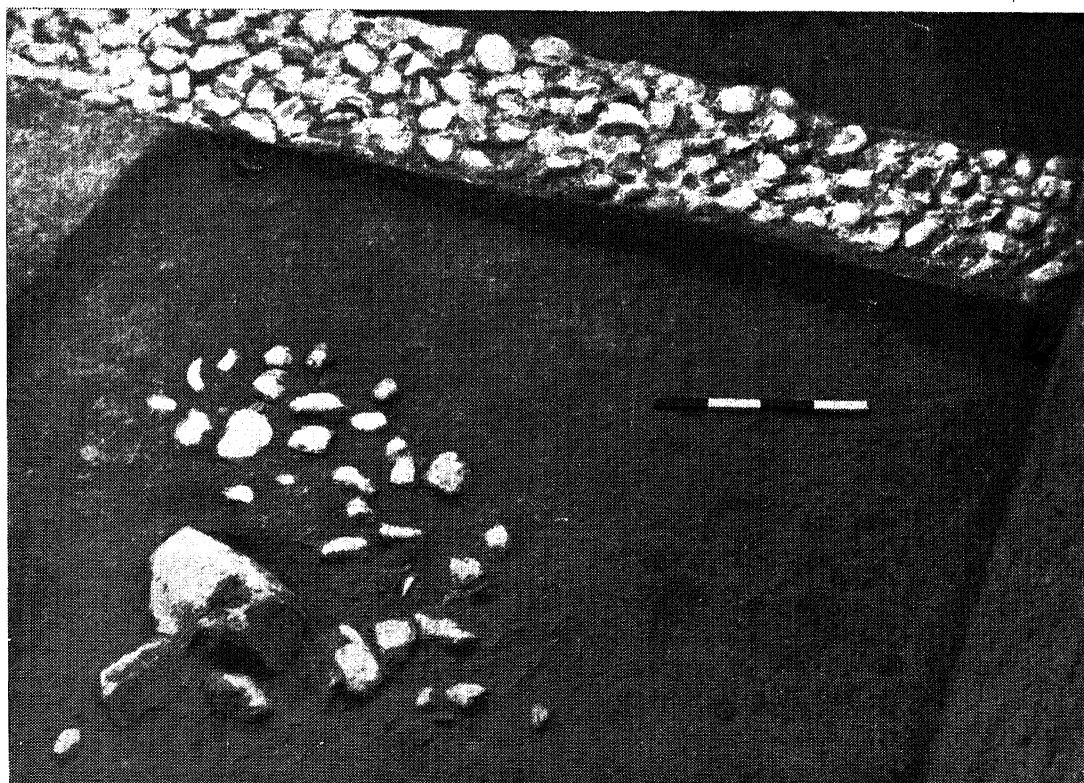
Section of rampart trench showing the sequence of layers



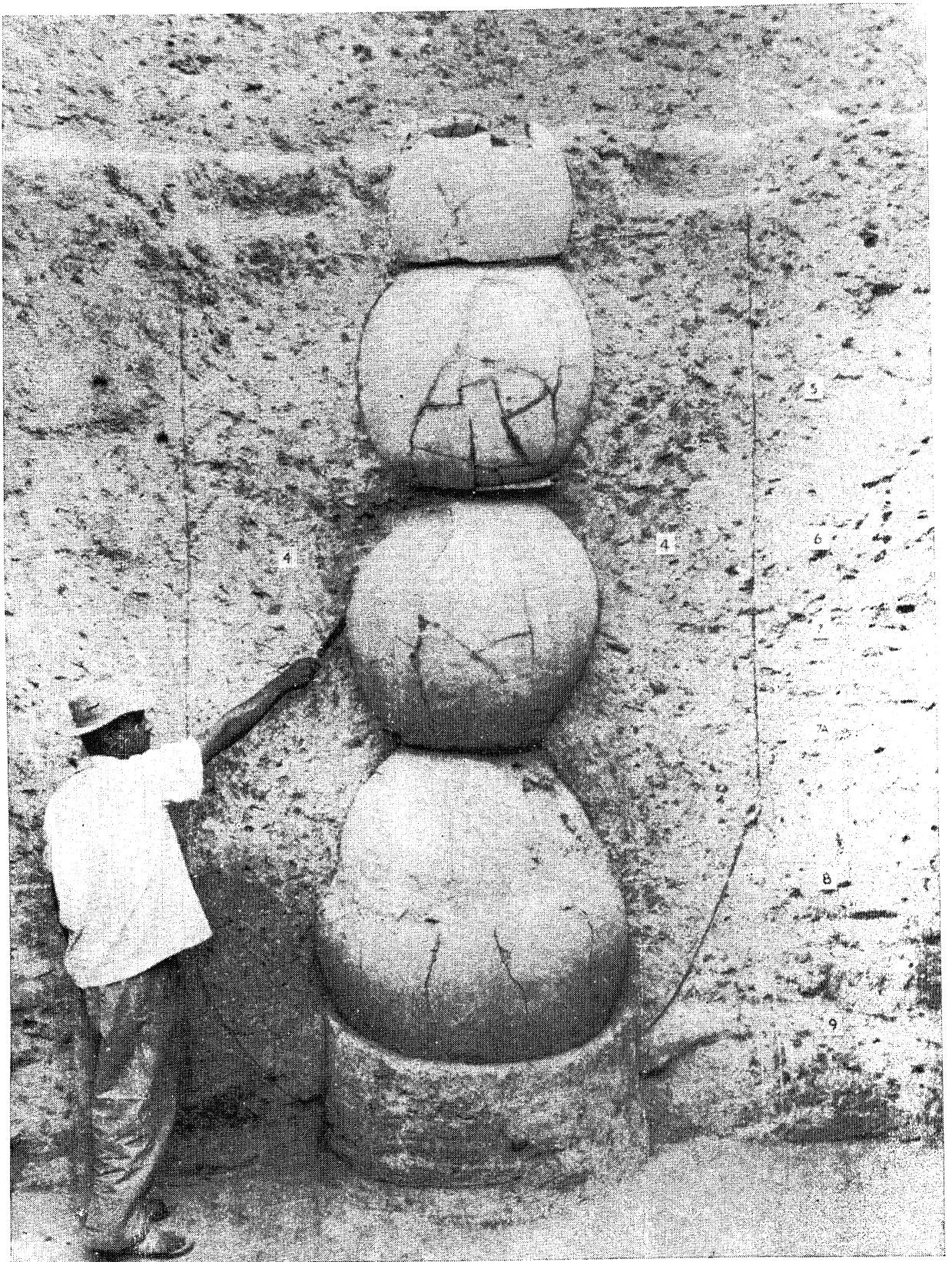
Section of Trench B3 showing sequence of layers and stratigraphy



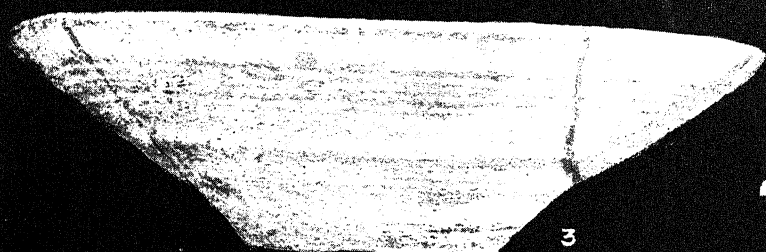
A. Kdn. 2 : Pavement of Satavahana Period



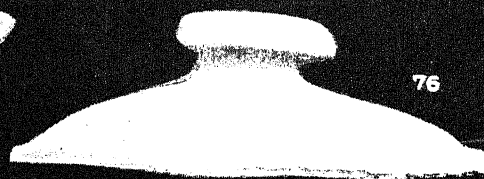
B. Stone foundation of wall : Trench E



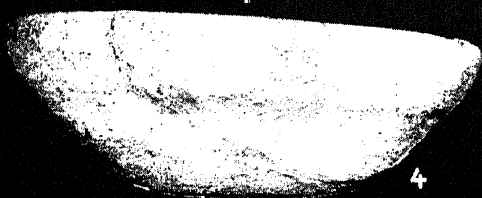
Soak-pits : Trench C



3



76



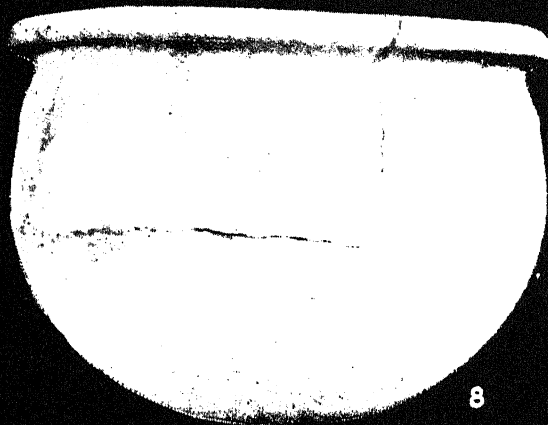
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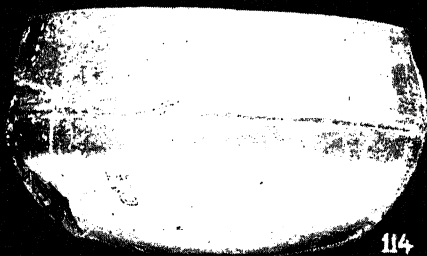
73



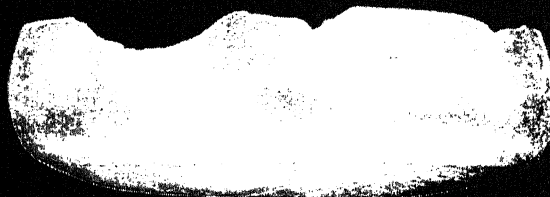
11



8



114



144

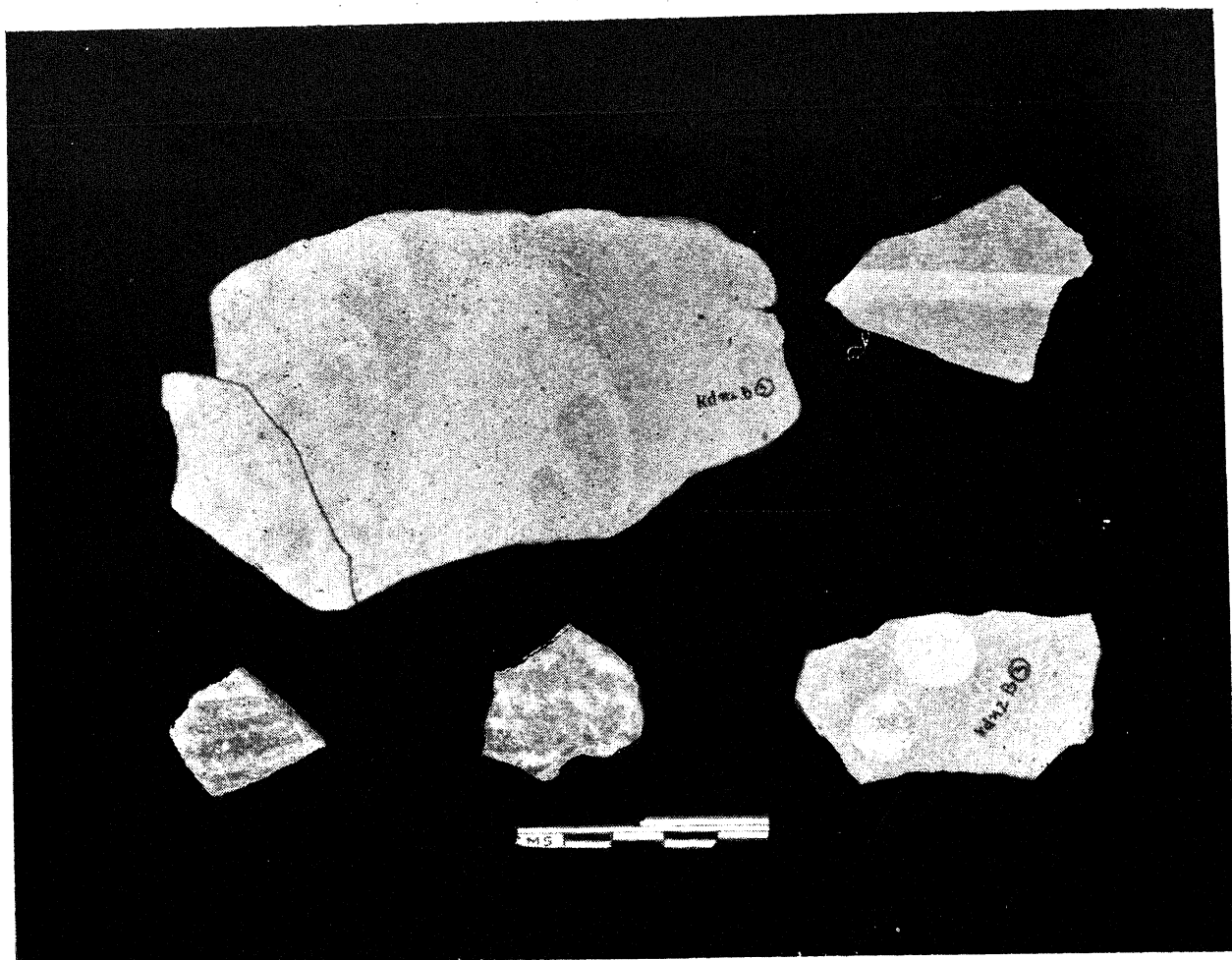


115

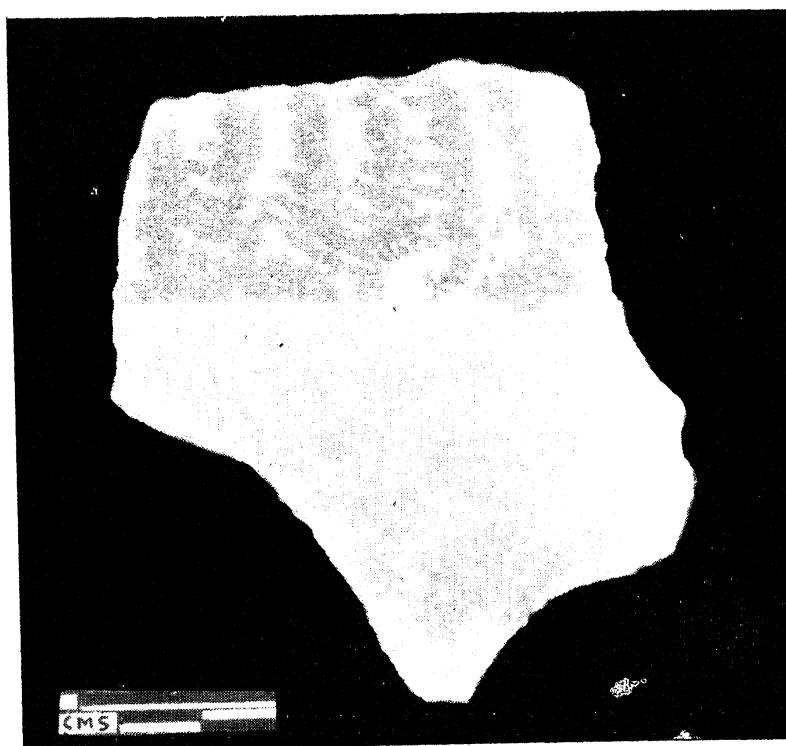


120

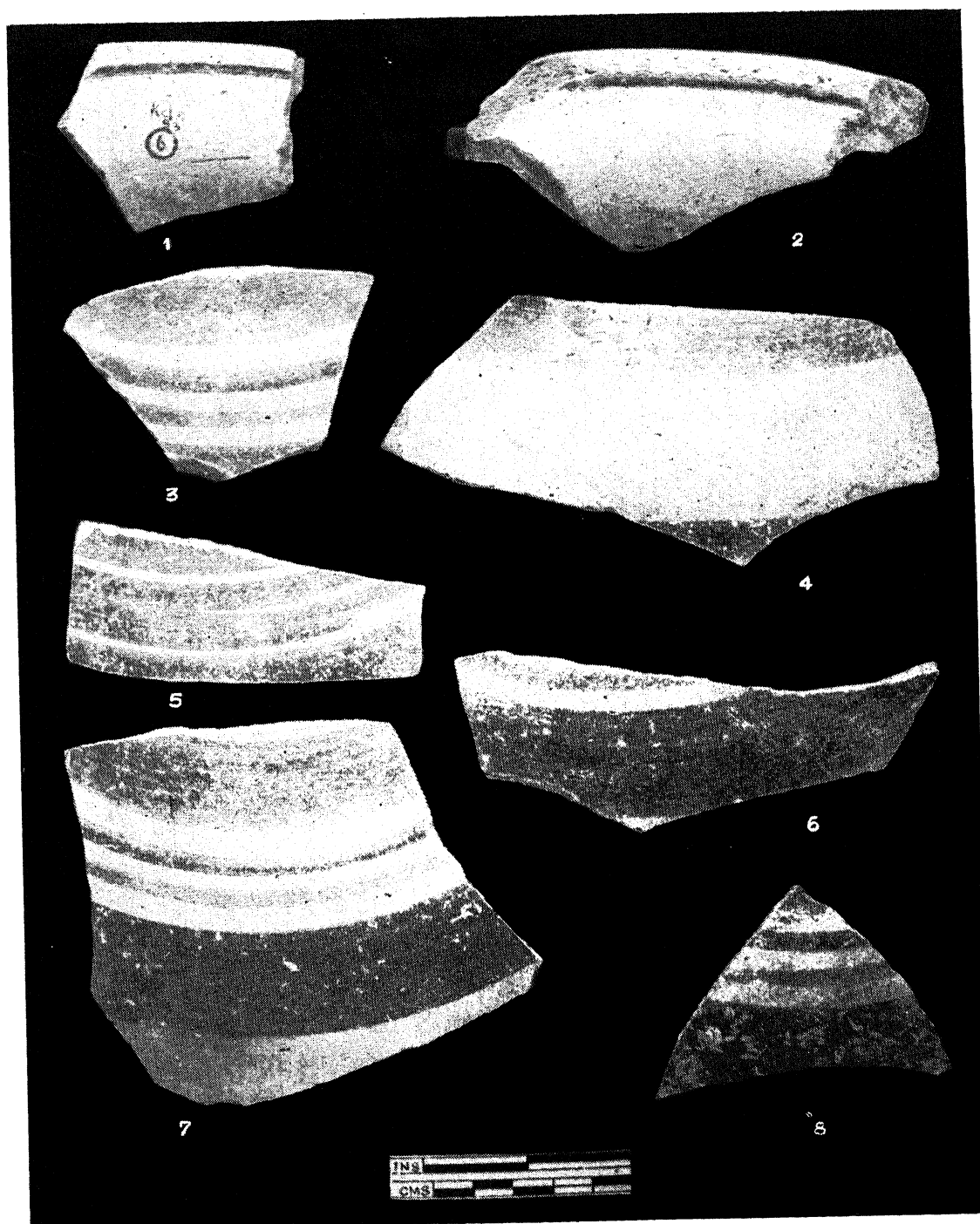
Pottery (Types 3, 4, 8, 11, 73, 76, 114, 115, 120, 144)



A. Painted Pottery (Types 1-5)



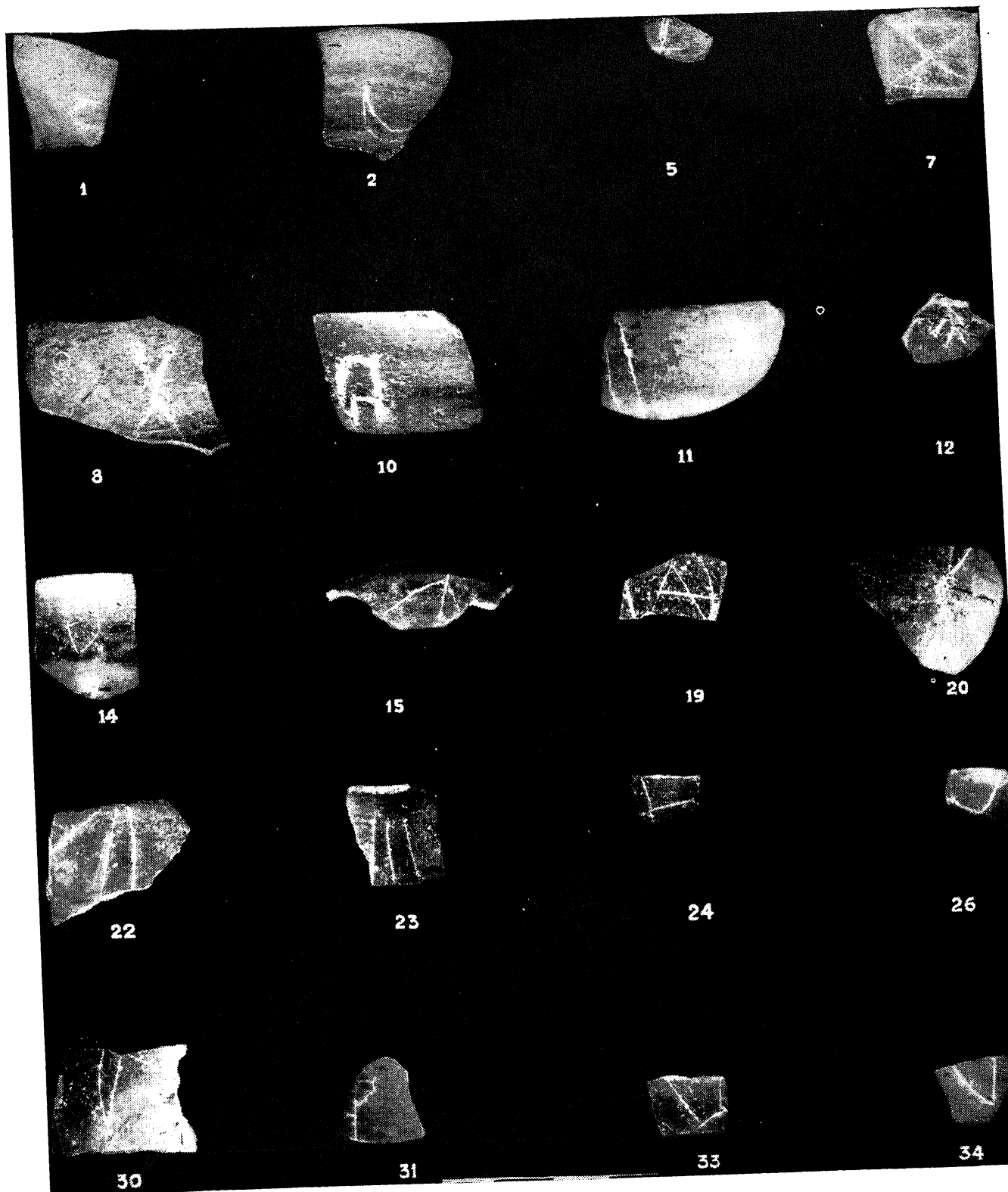
B. Painted Pottery, Period I



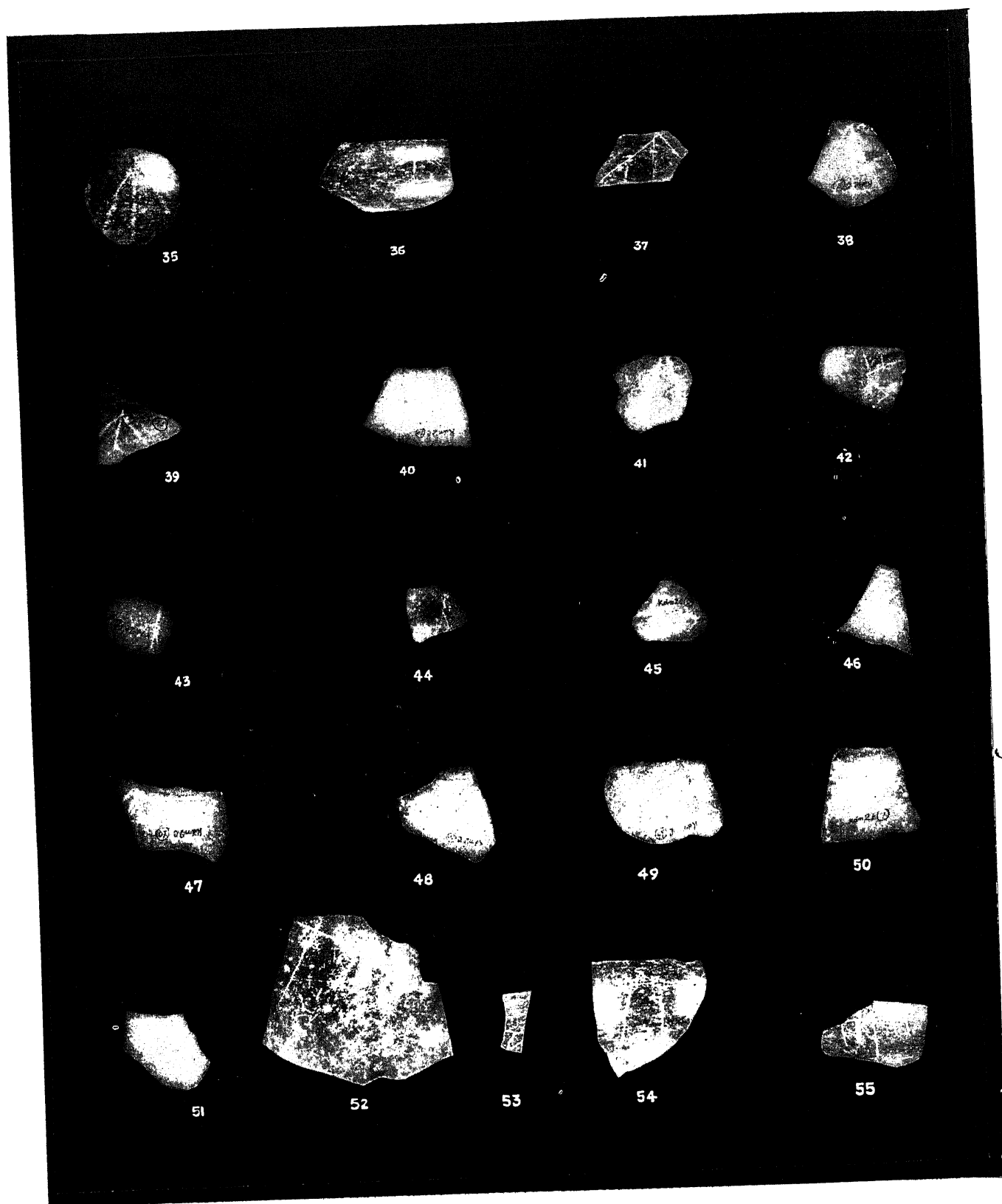
Painted Pottery of post-Satavahana Period



Dish with Graffiti showing exterior and interior



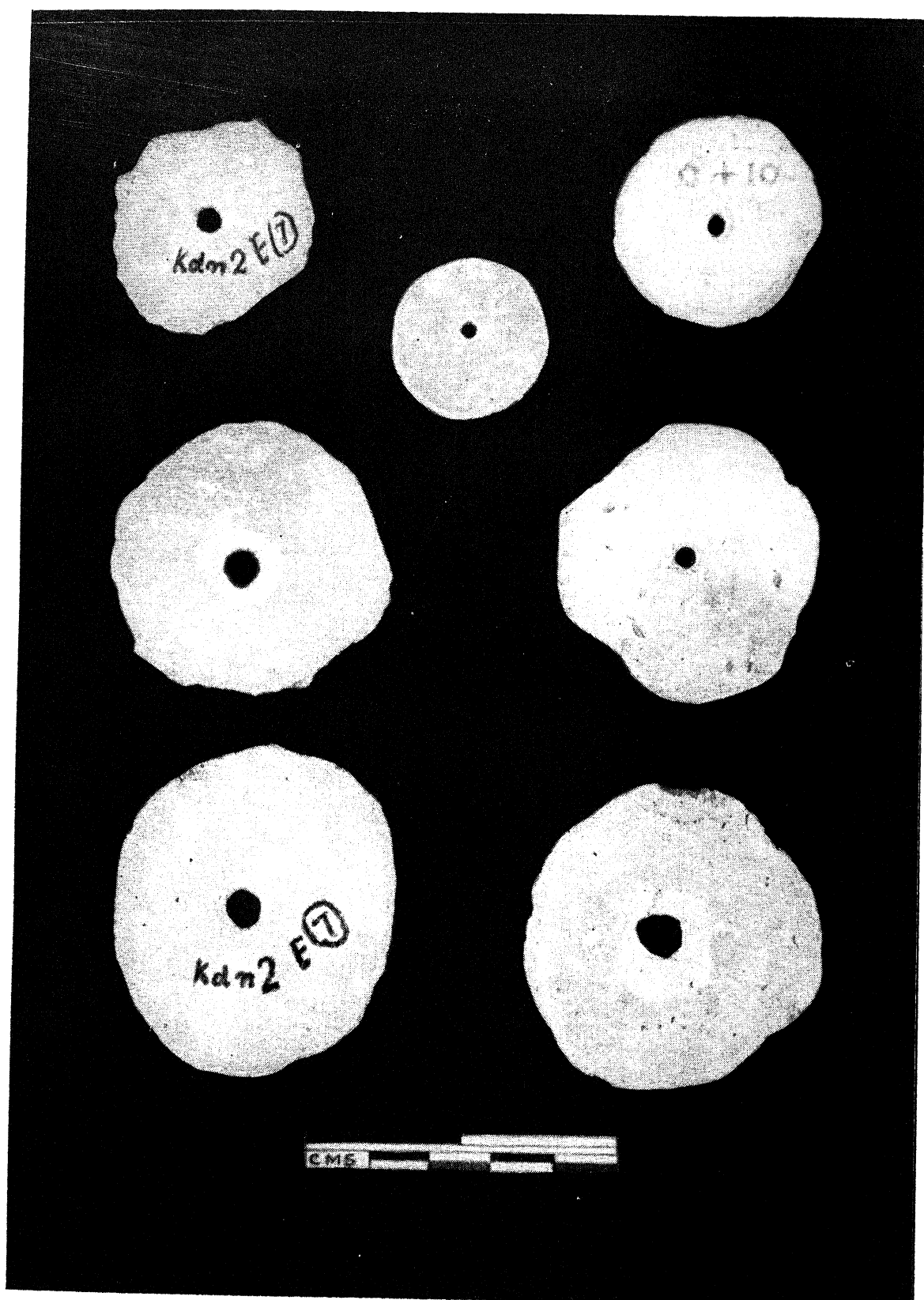
Graffiti on Pottery (Types 1-34)



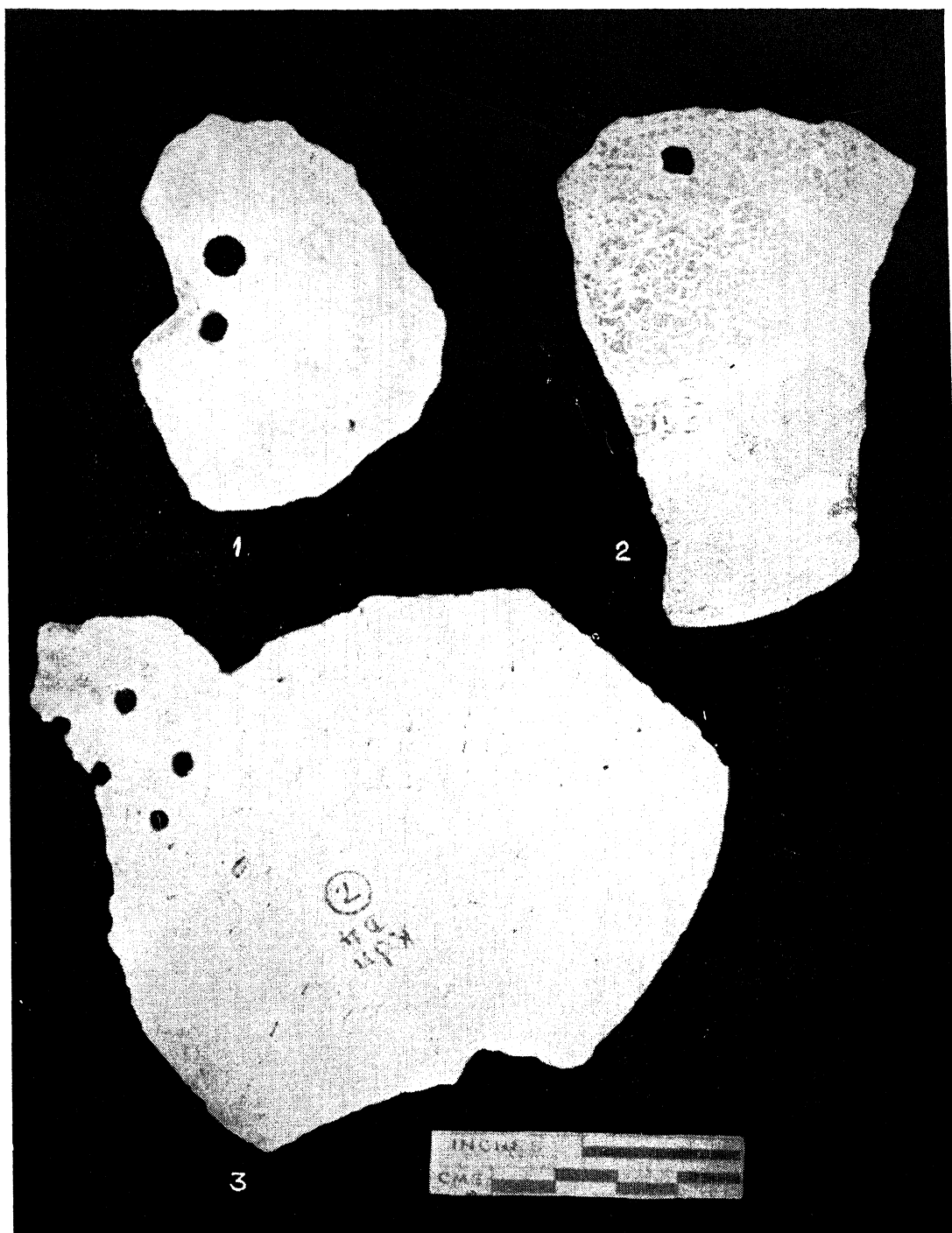
Graffiti on Pottery (Types 35-55)



Decorated pottery—incised sherds



Spindle whorls



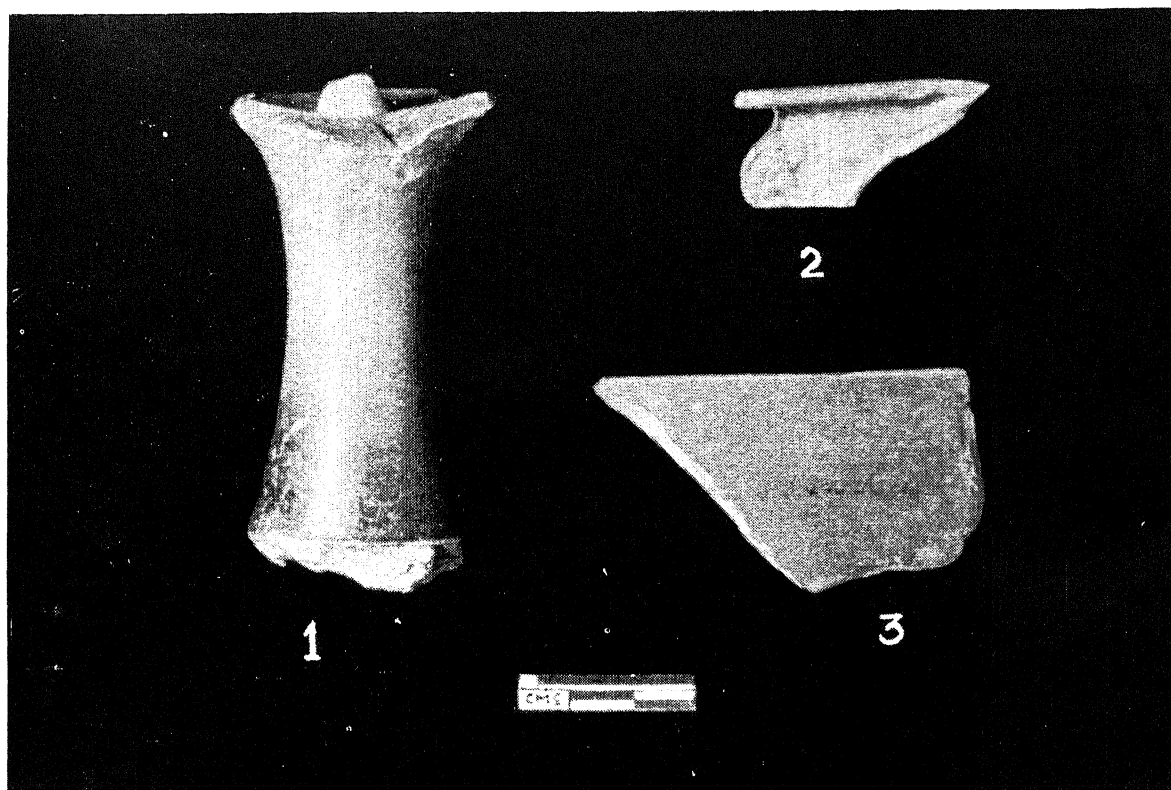
Miscellaneous pottery—perforated sherds



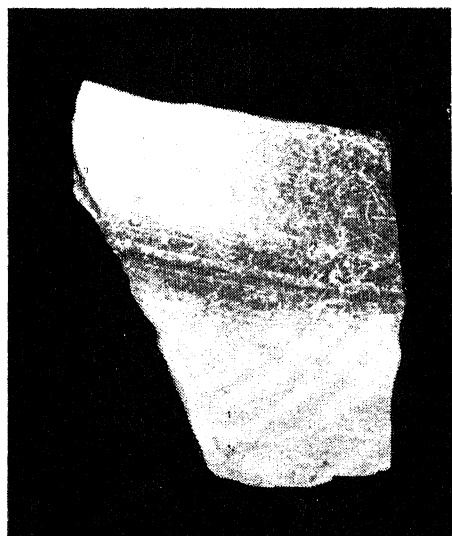
Decorated pottery—stamped and applique' decorations



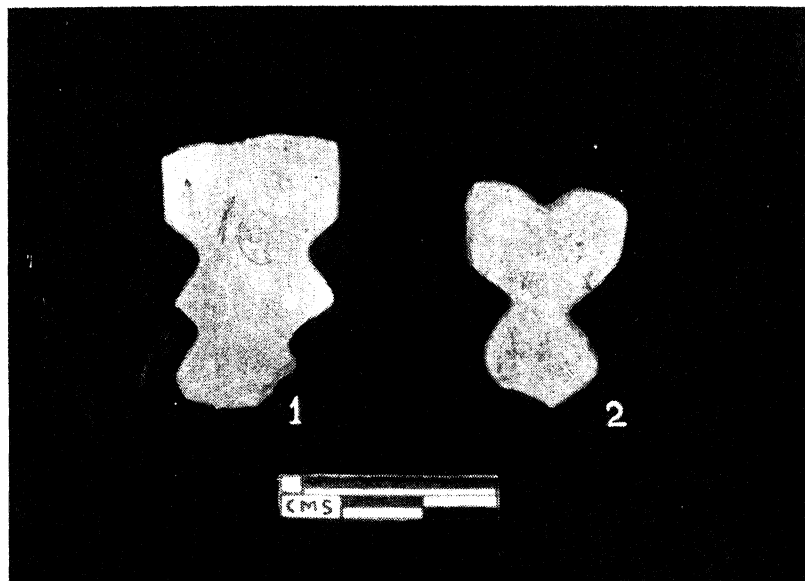
Pot-sherds with cloth impressions



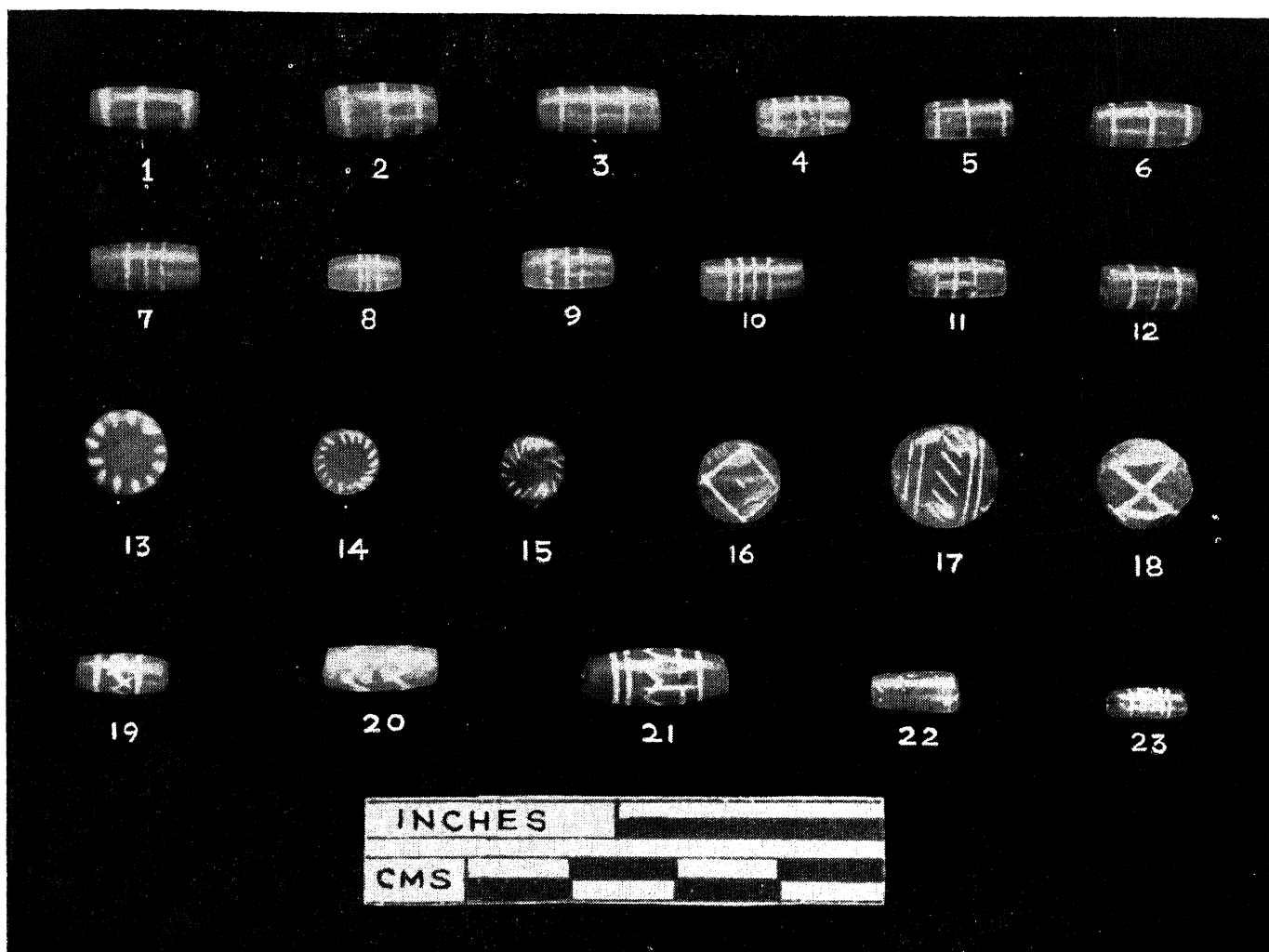
A. Red-polished ware



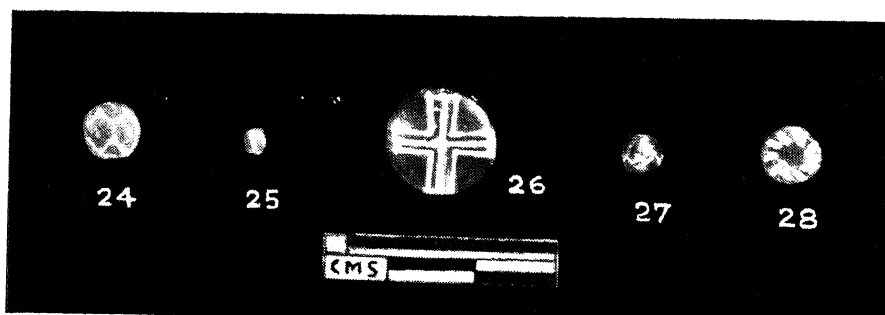
B. Russet-coated Andhra ware



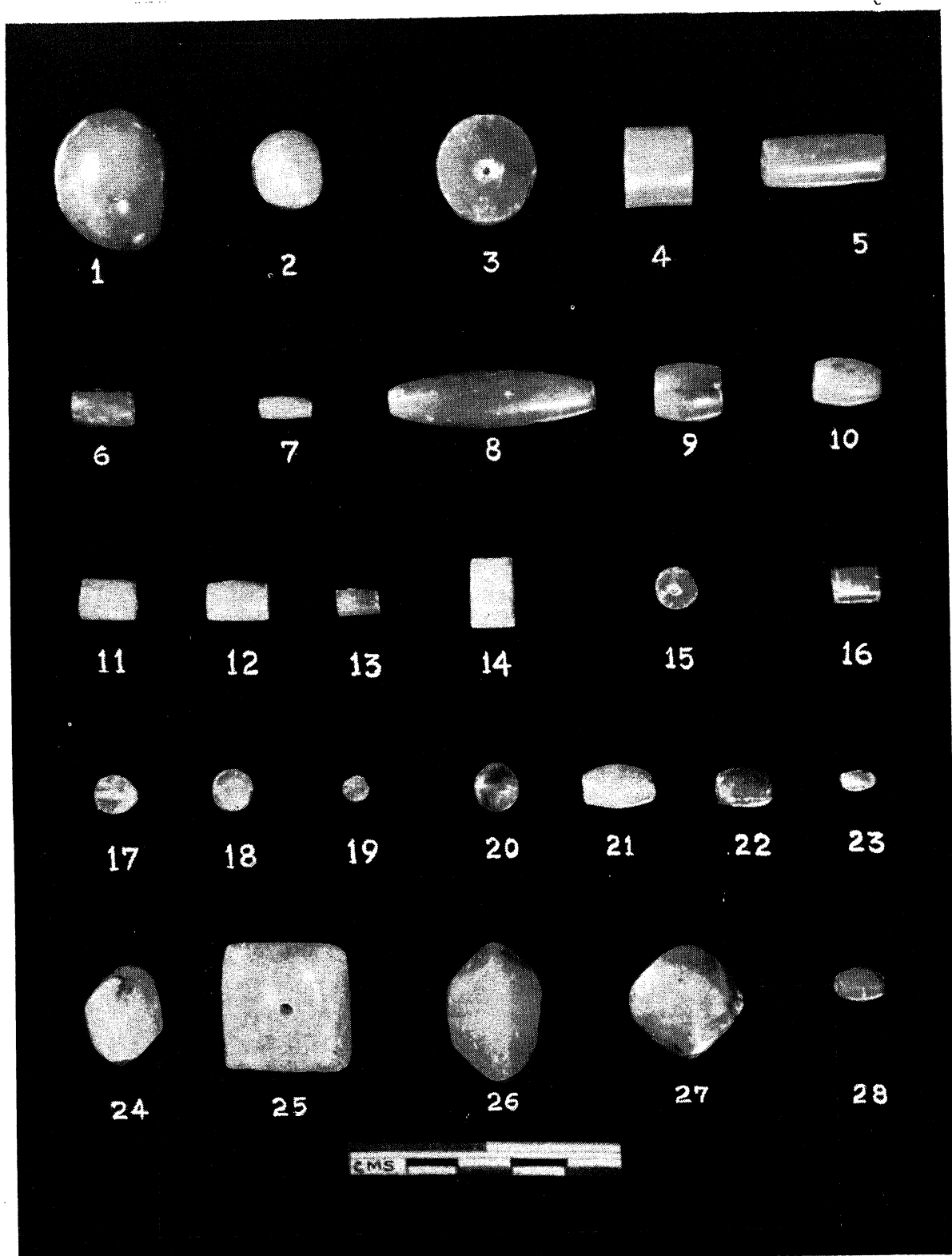
C. Shaped pot-sherds



A. Etched Carnelian beads



B. Etched Carnelian beads



Carnelian beads



1



2



3



4



5



6



7



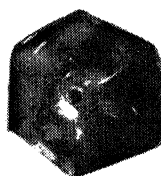
8



9



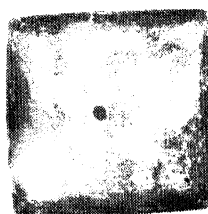
10



11



12



13



14



15



16



17



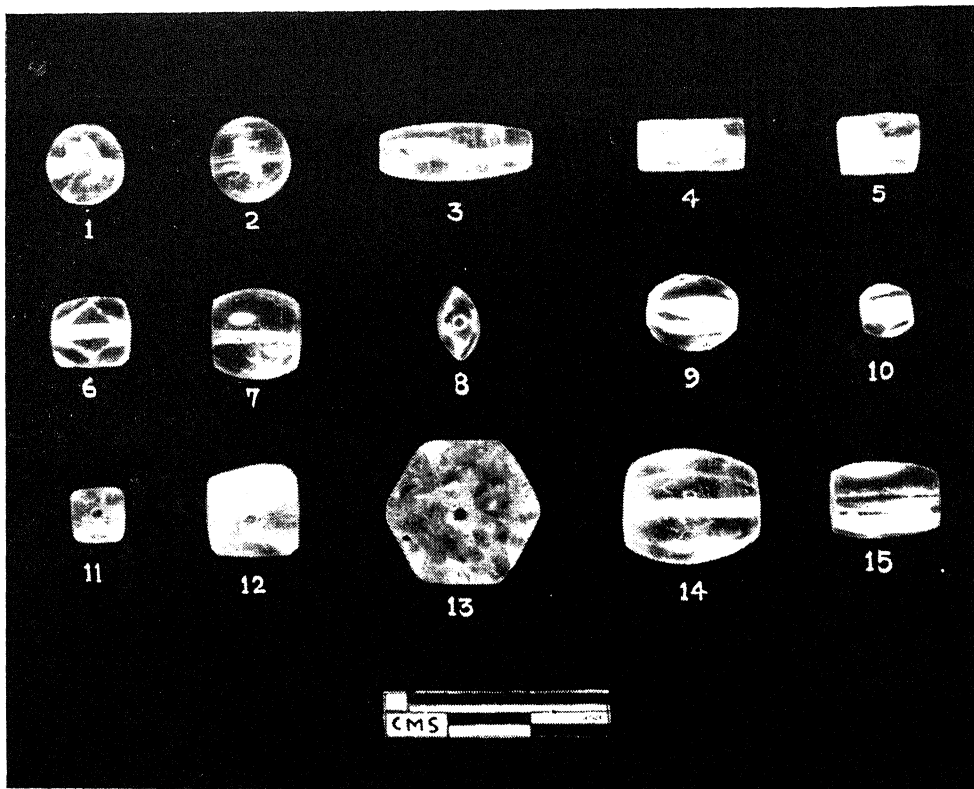
18



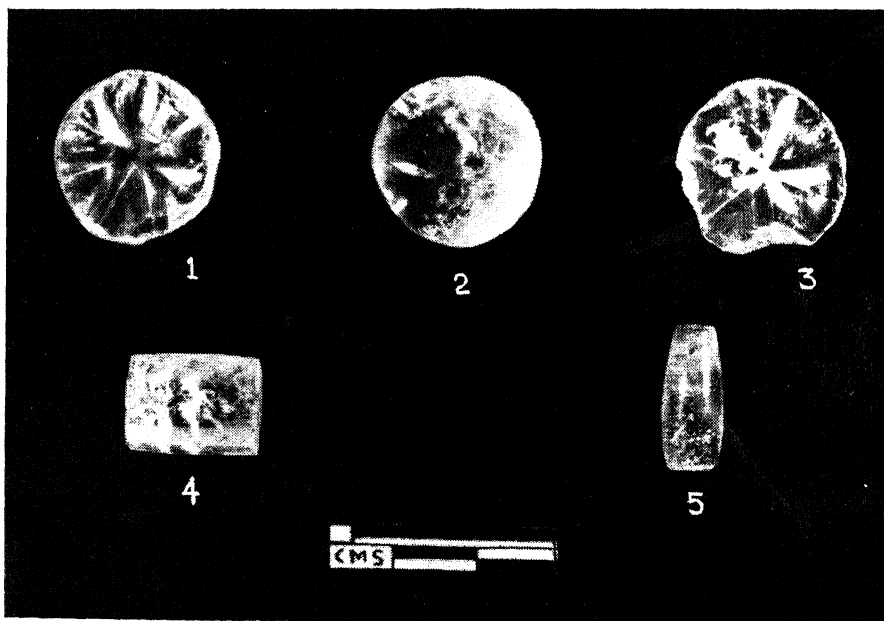
19



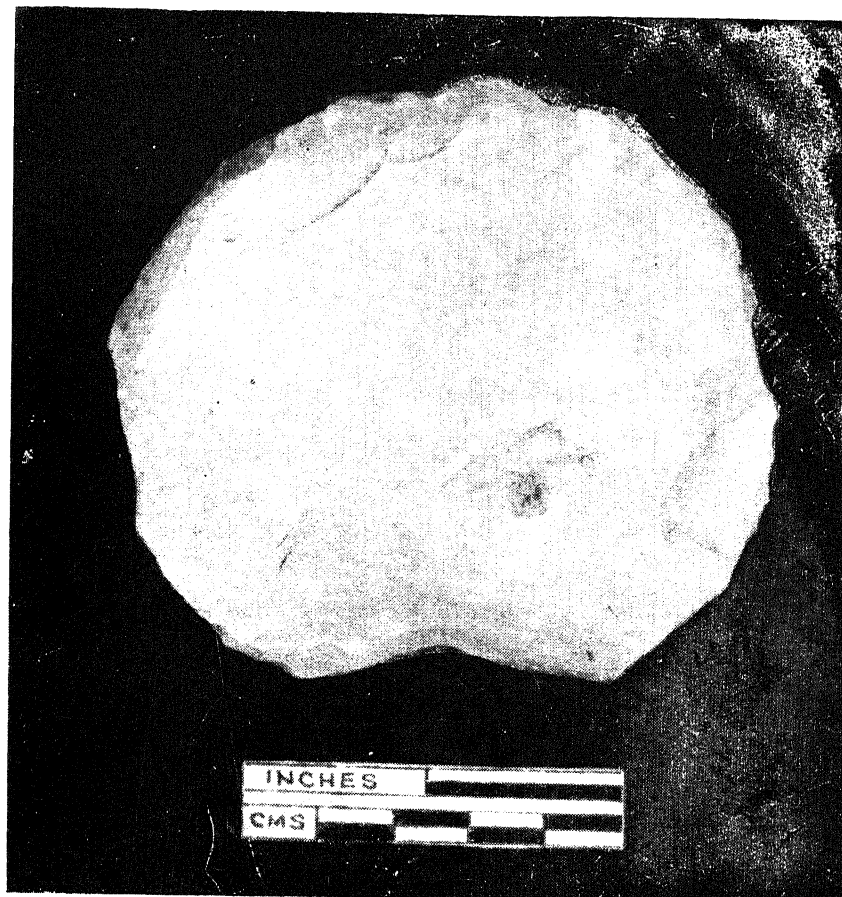
Semi-precious stone beads



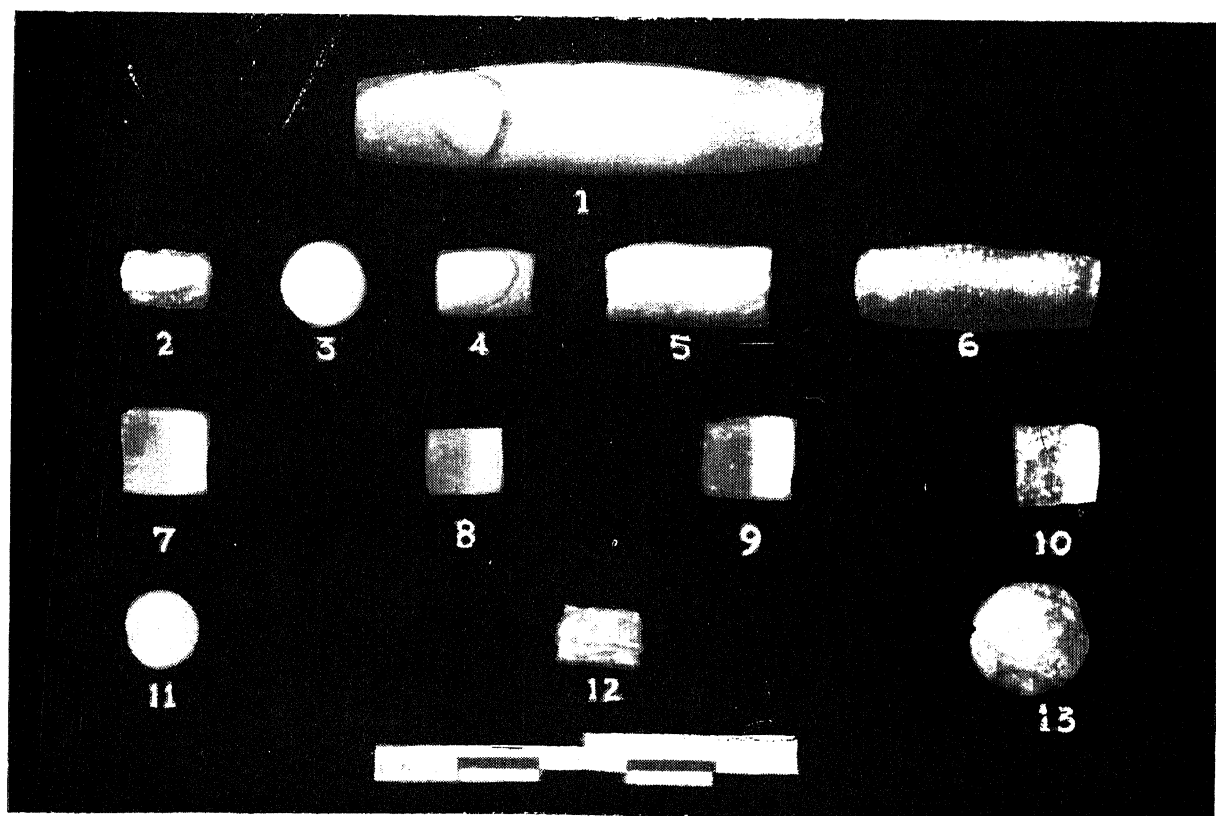
A. Crystal beads



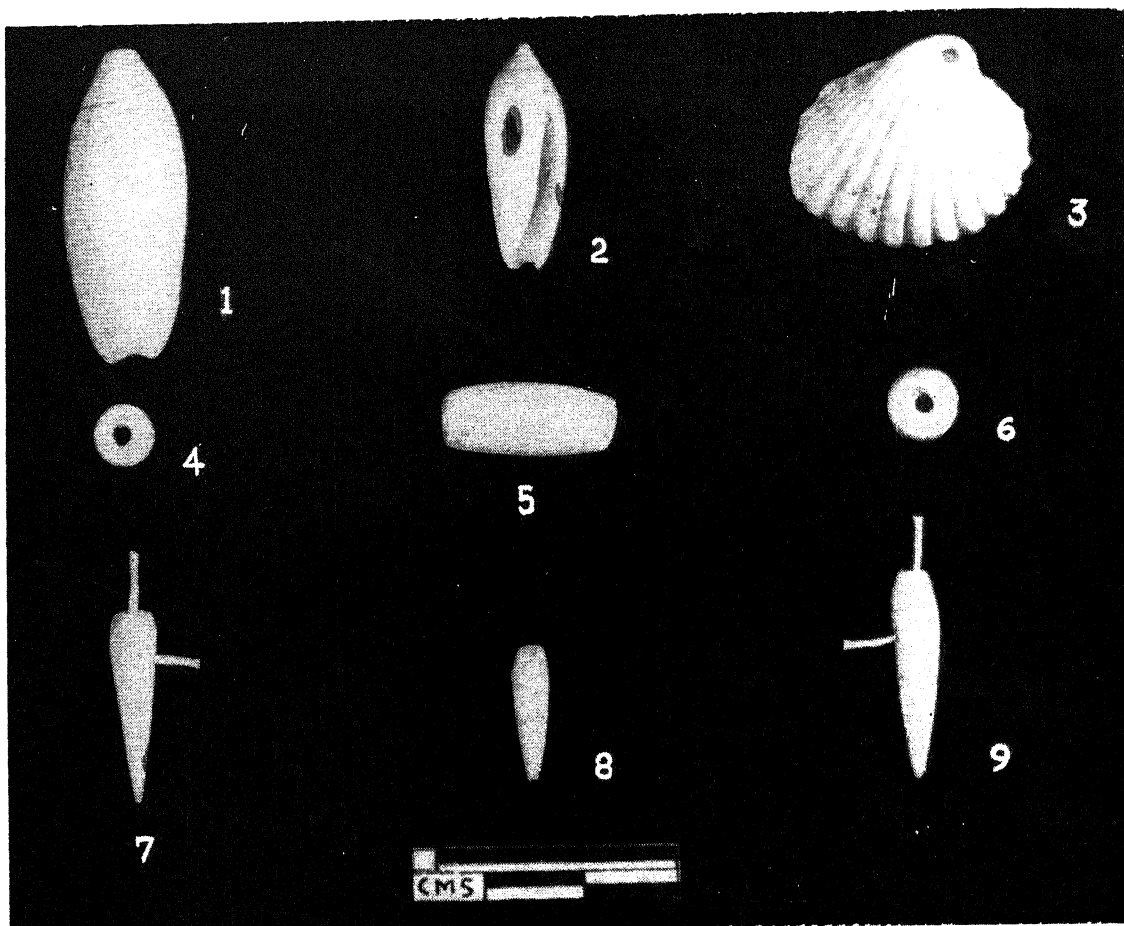
B. Crystal objects



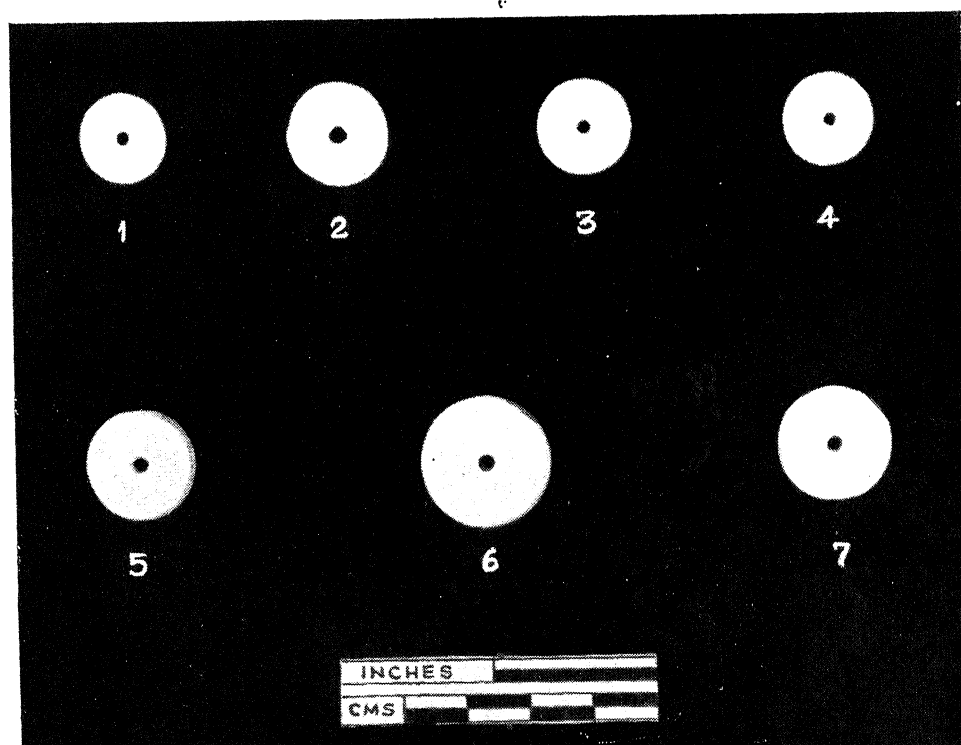
A. Agate lid



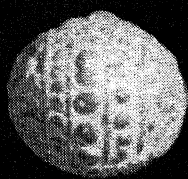
B. Unfinished beads



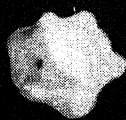
A. Shell beads



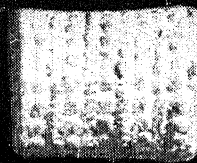
B. Steatite beads



1



2



3



4



5



6



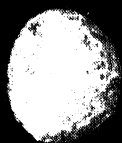
7



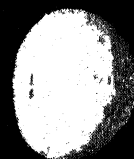
A. Terracotta beads



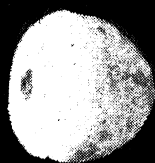
1



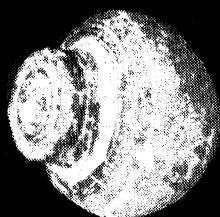
2



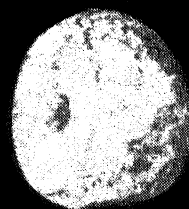
3



4



5

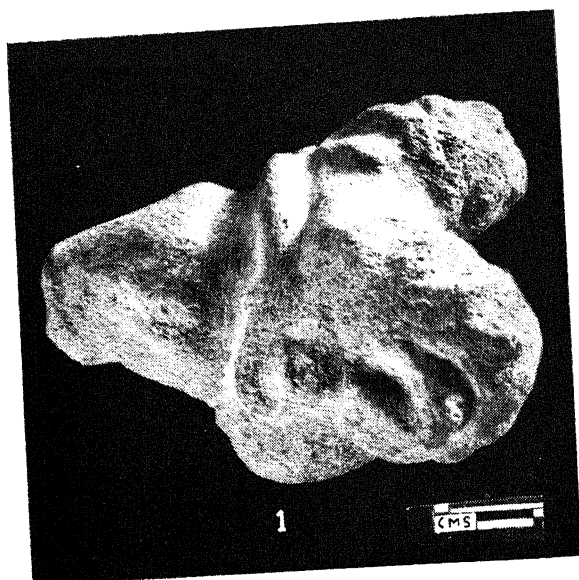


6

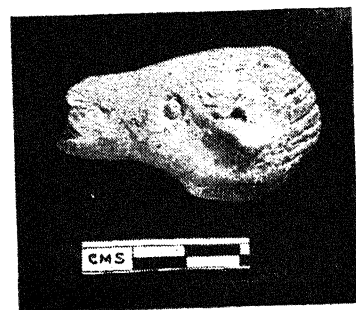


B. Terracotta Ghata and Areca-nut shaped beads

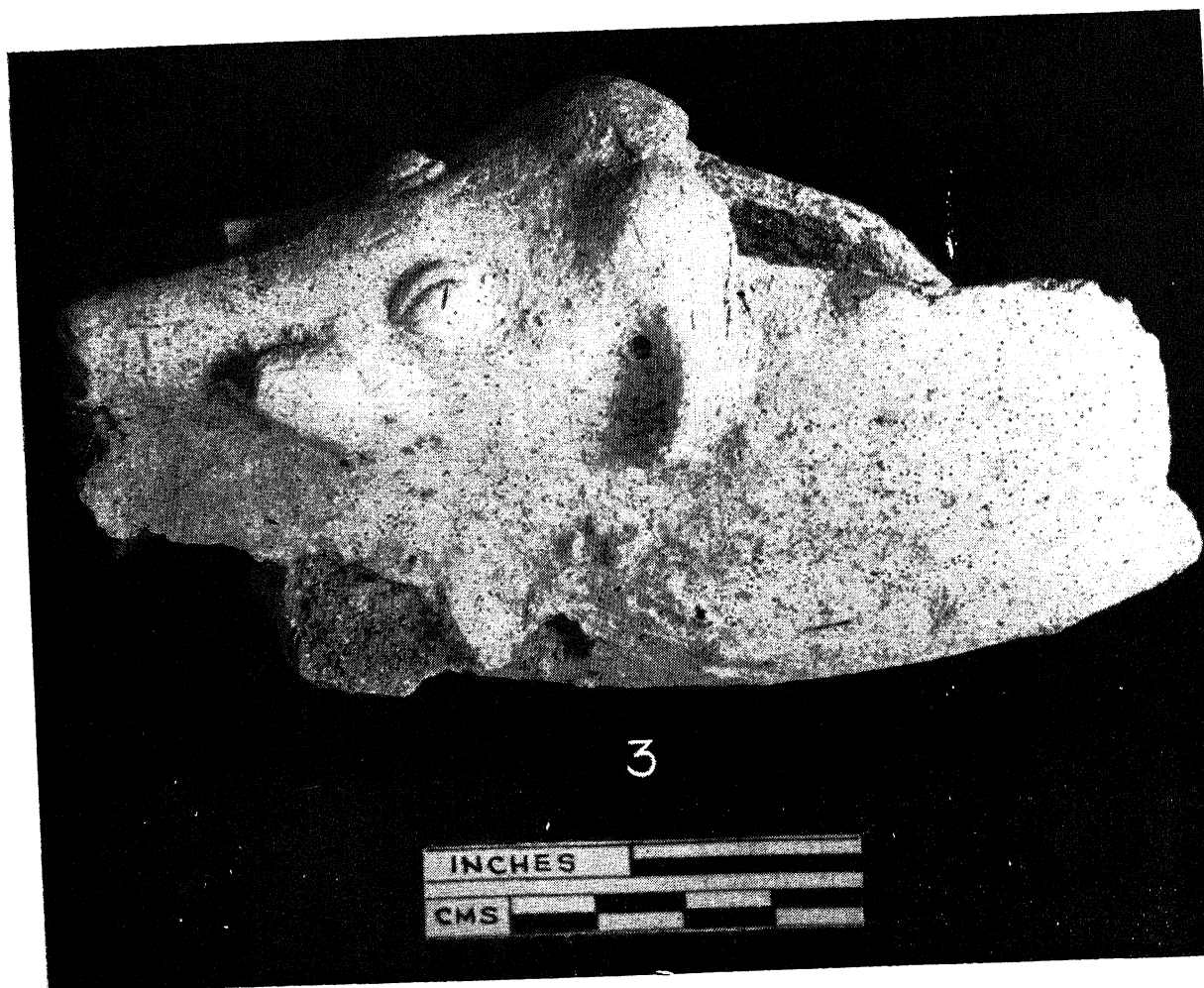
TERRACOTTA FIGURINES



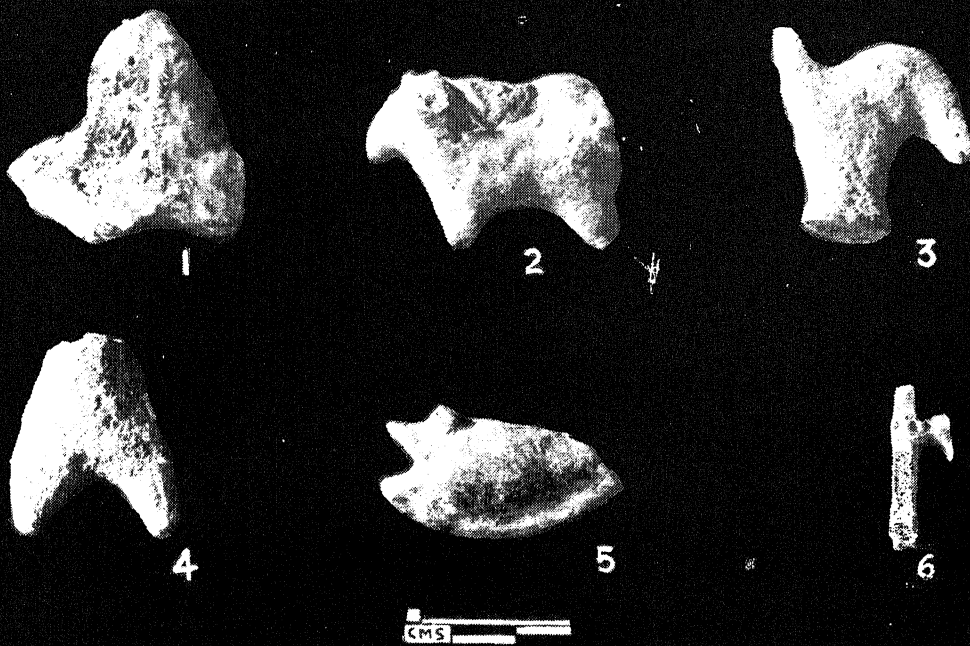
A. Ram



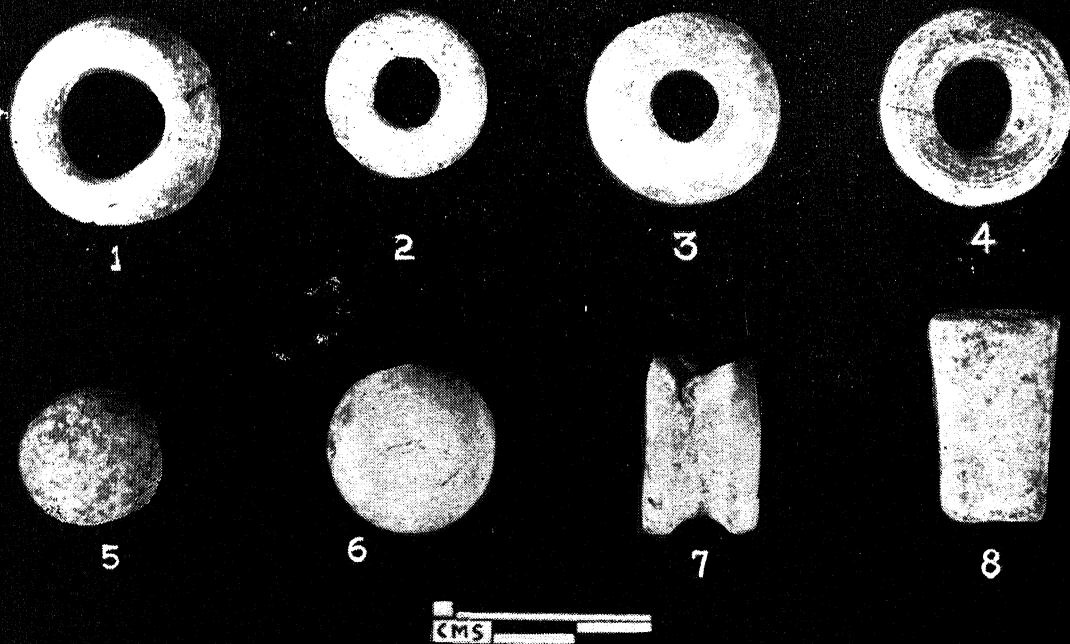
B. Horse



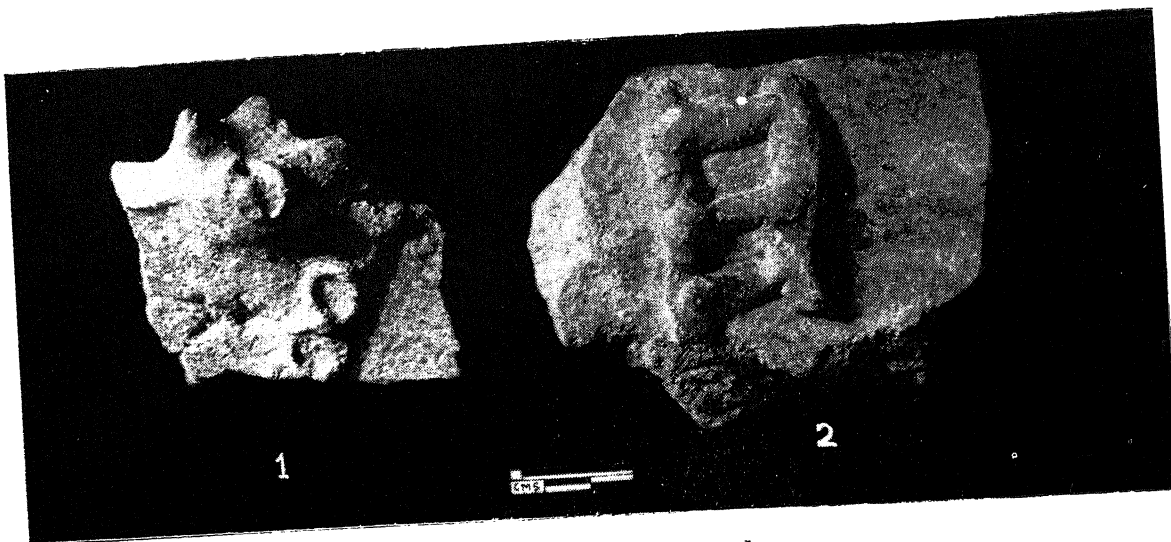
C. Elephant



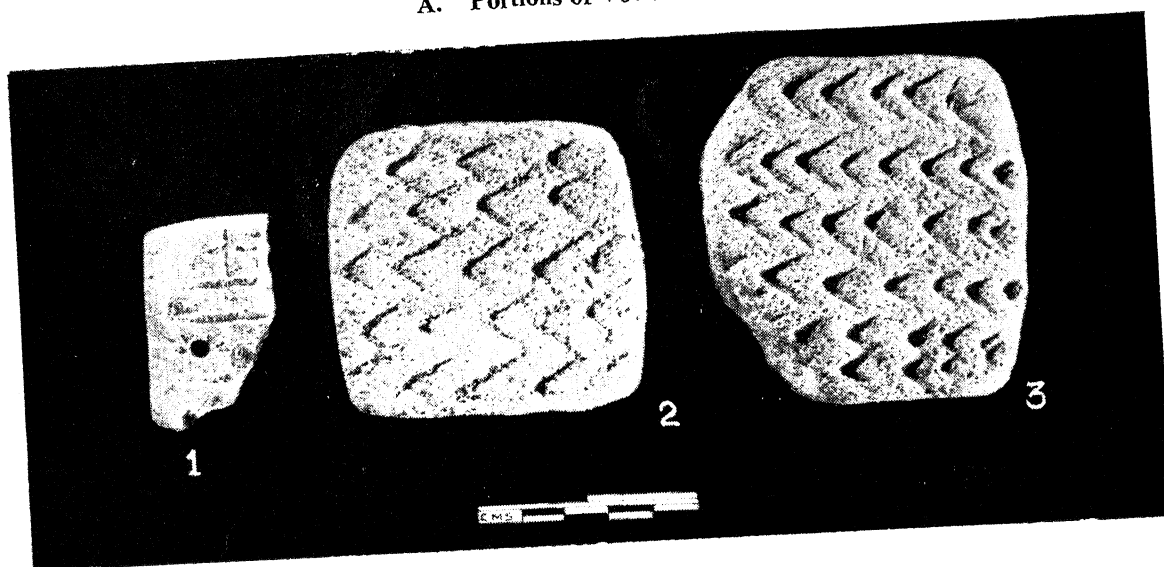
A. Terracotta Figurines



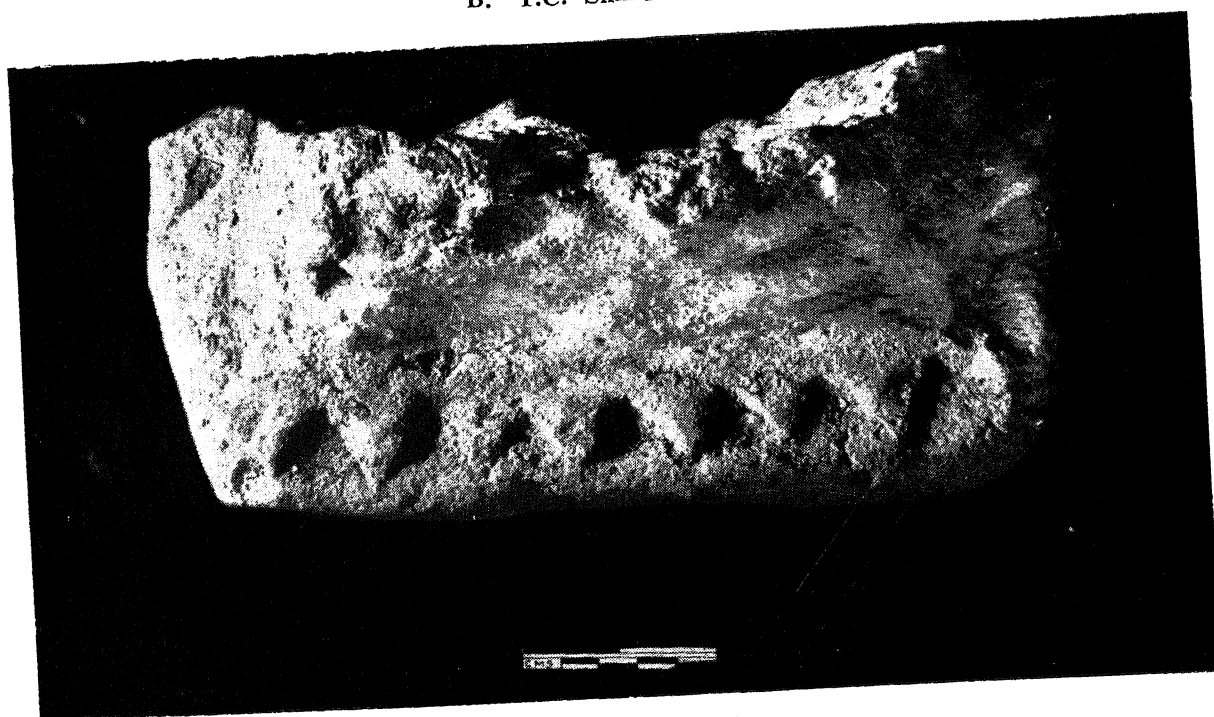
B. T. C. balls, spindles, ear plugs and a stopper



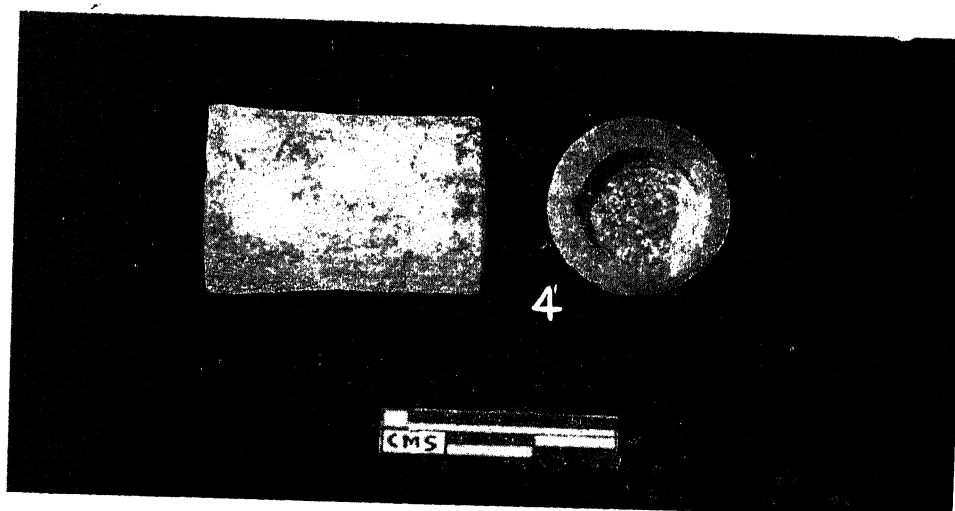
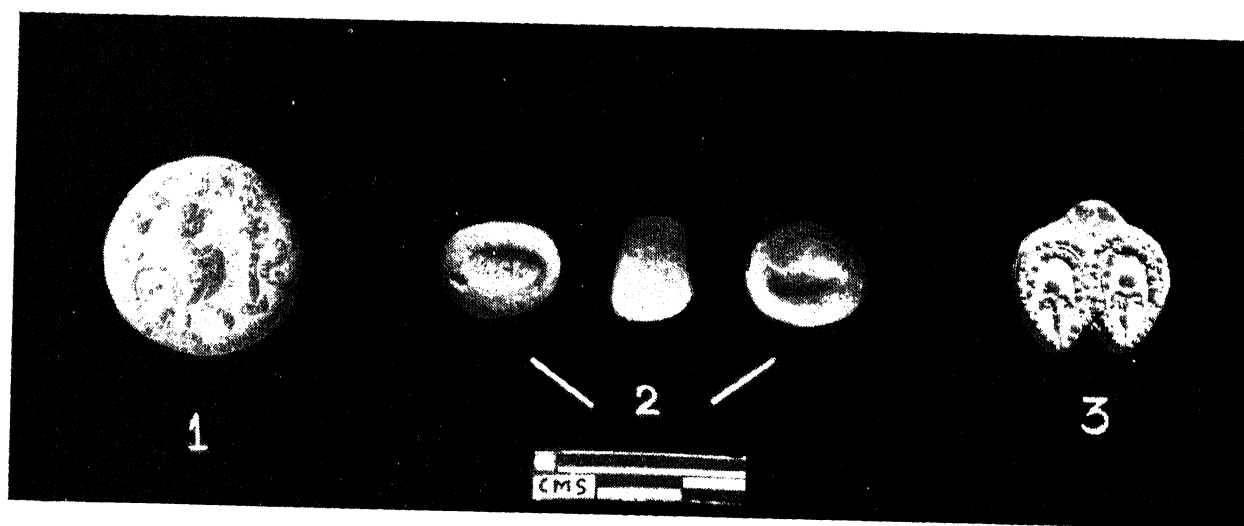
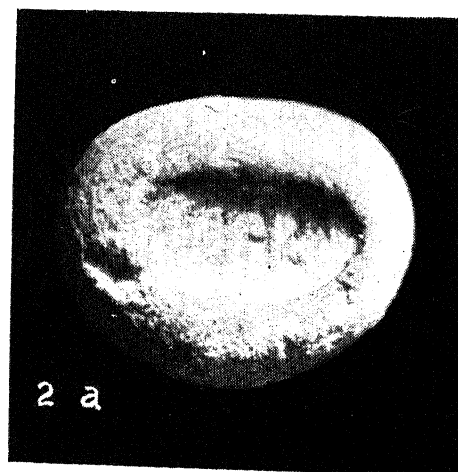
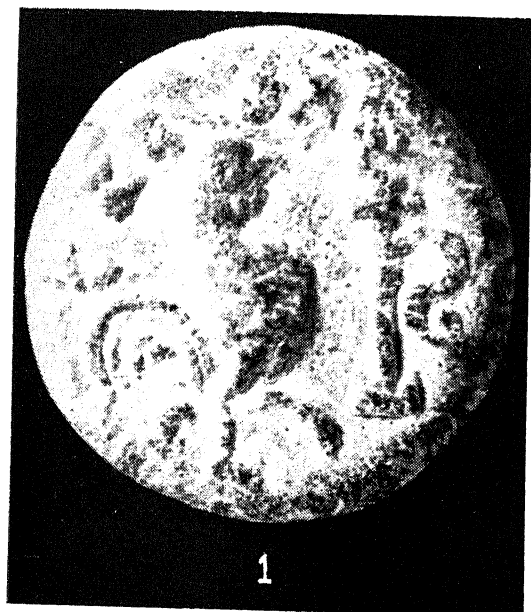
A. Portions of Votive tanks



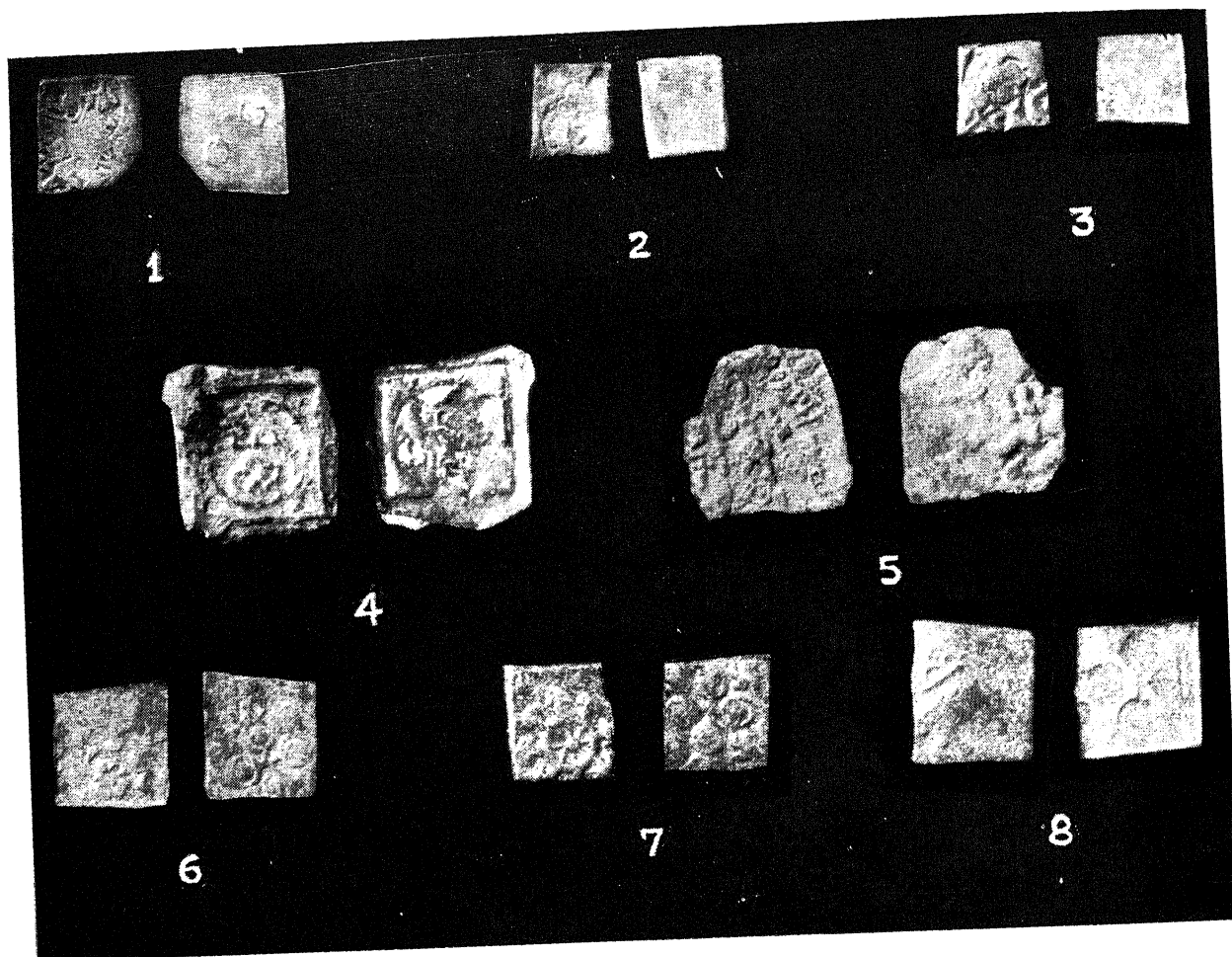
B. T.C. Skin-rubbers



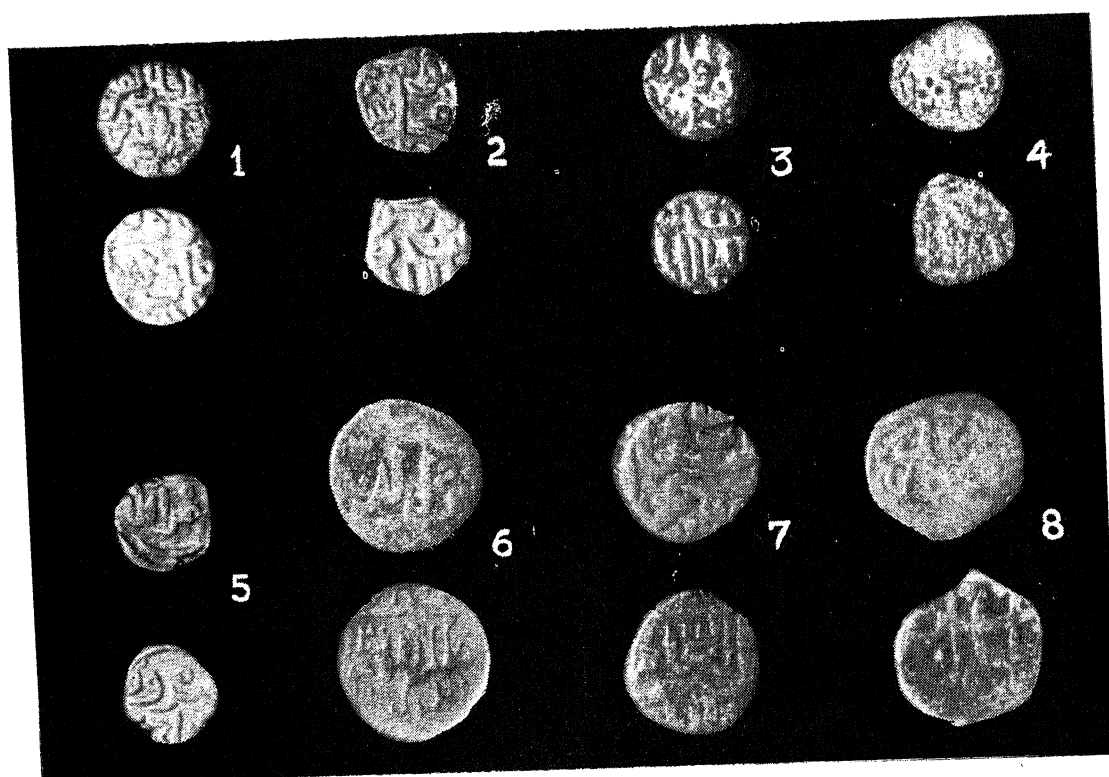
C. T.C. Finial (?)



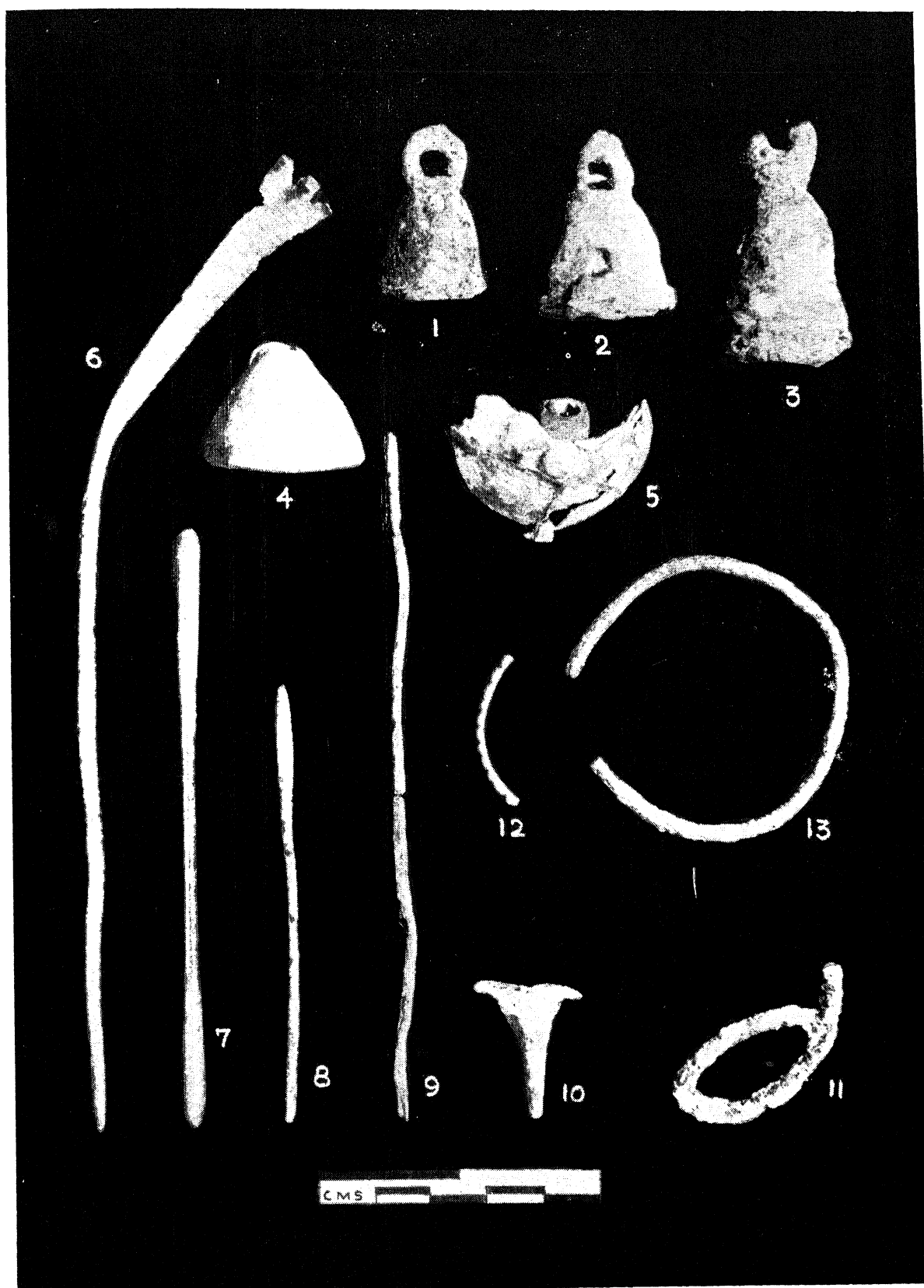
Terracotta Sealings, Bullae and a Die



A. Ancient coins from excavations

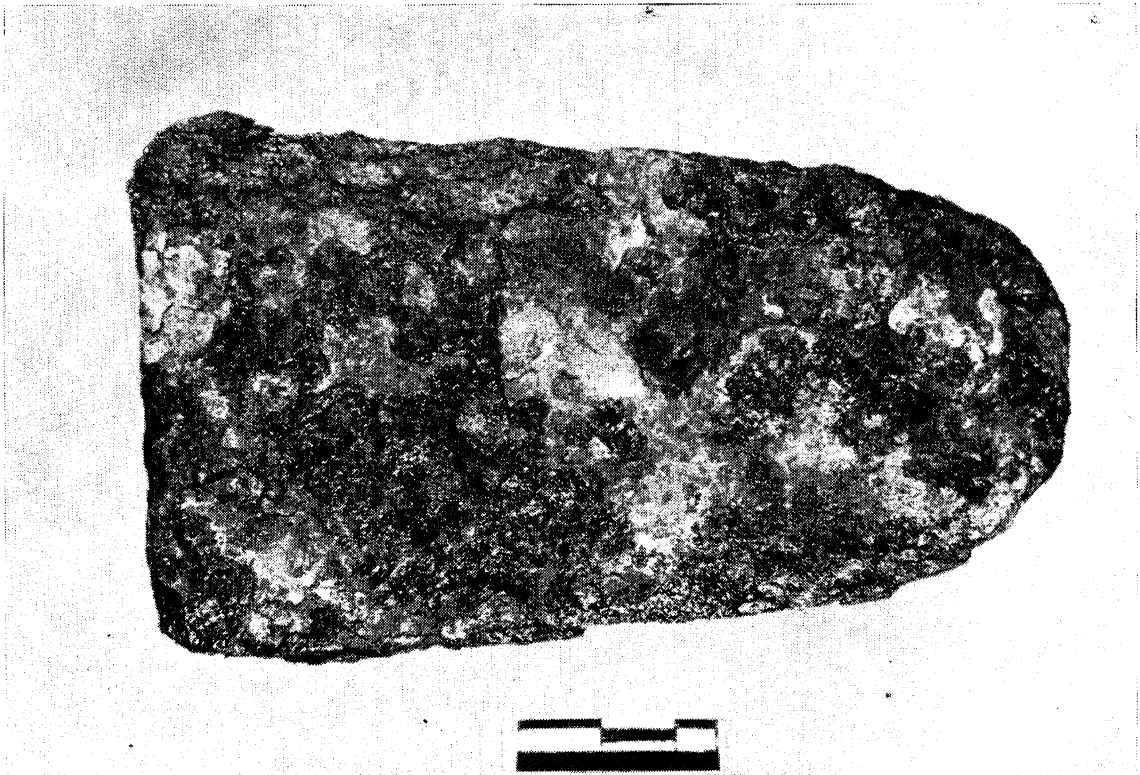


B. Muslim coins (Surface finds)

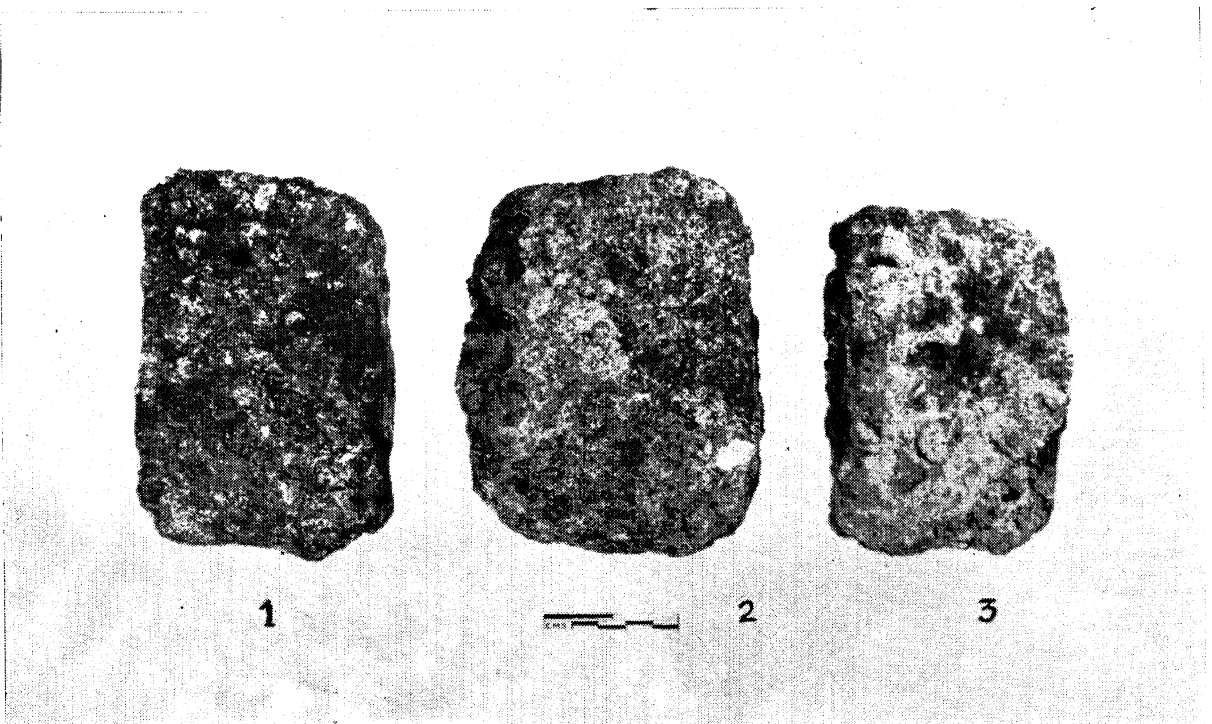


Copper objects

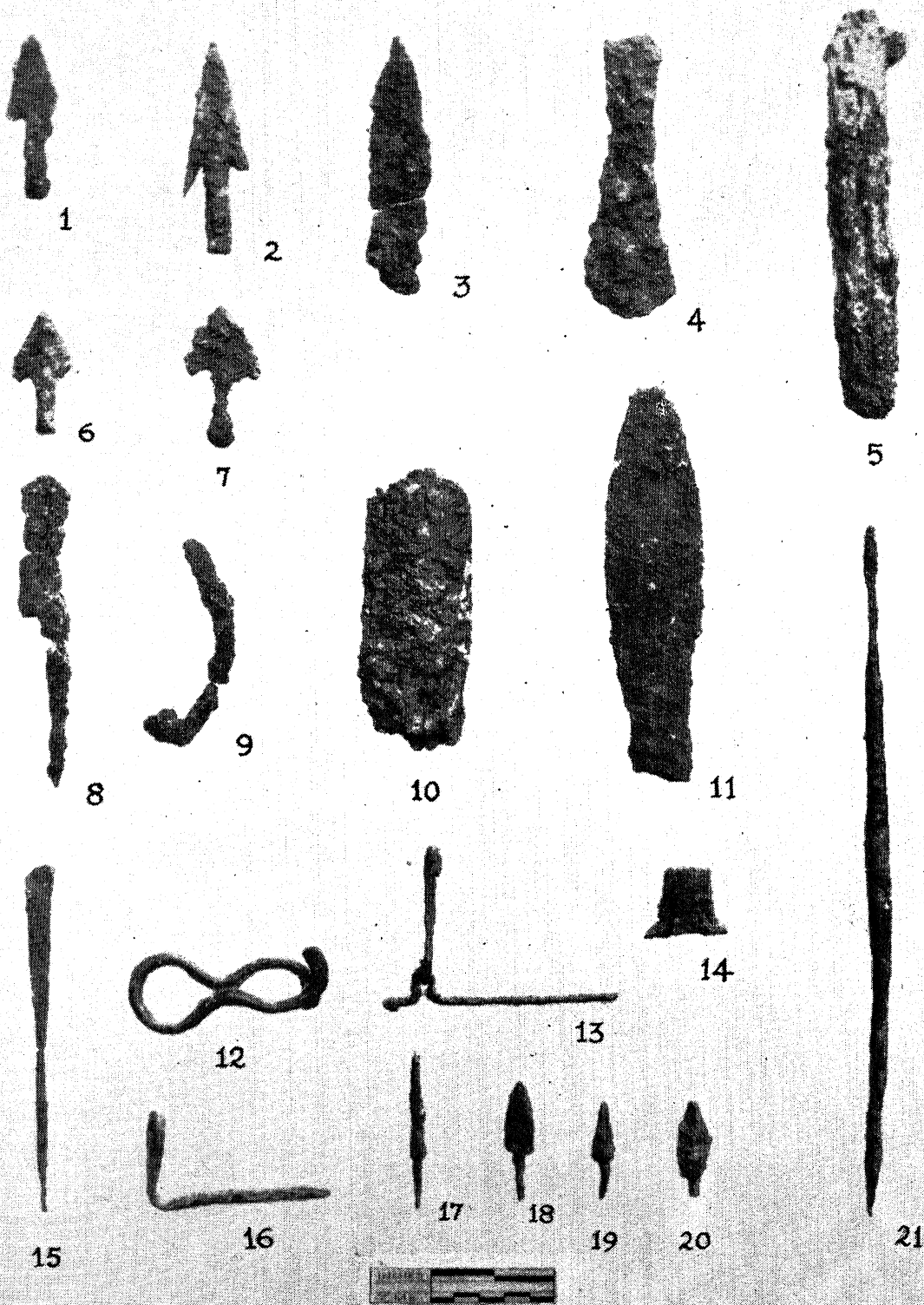
IRON OBJECTS

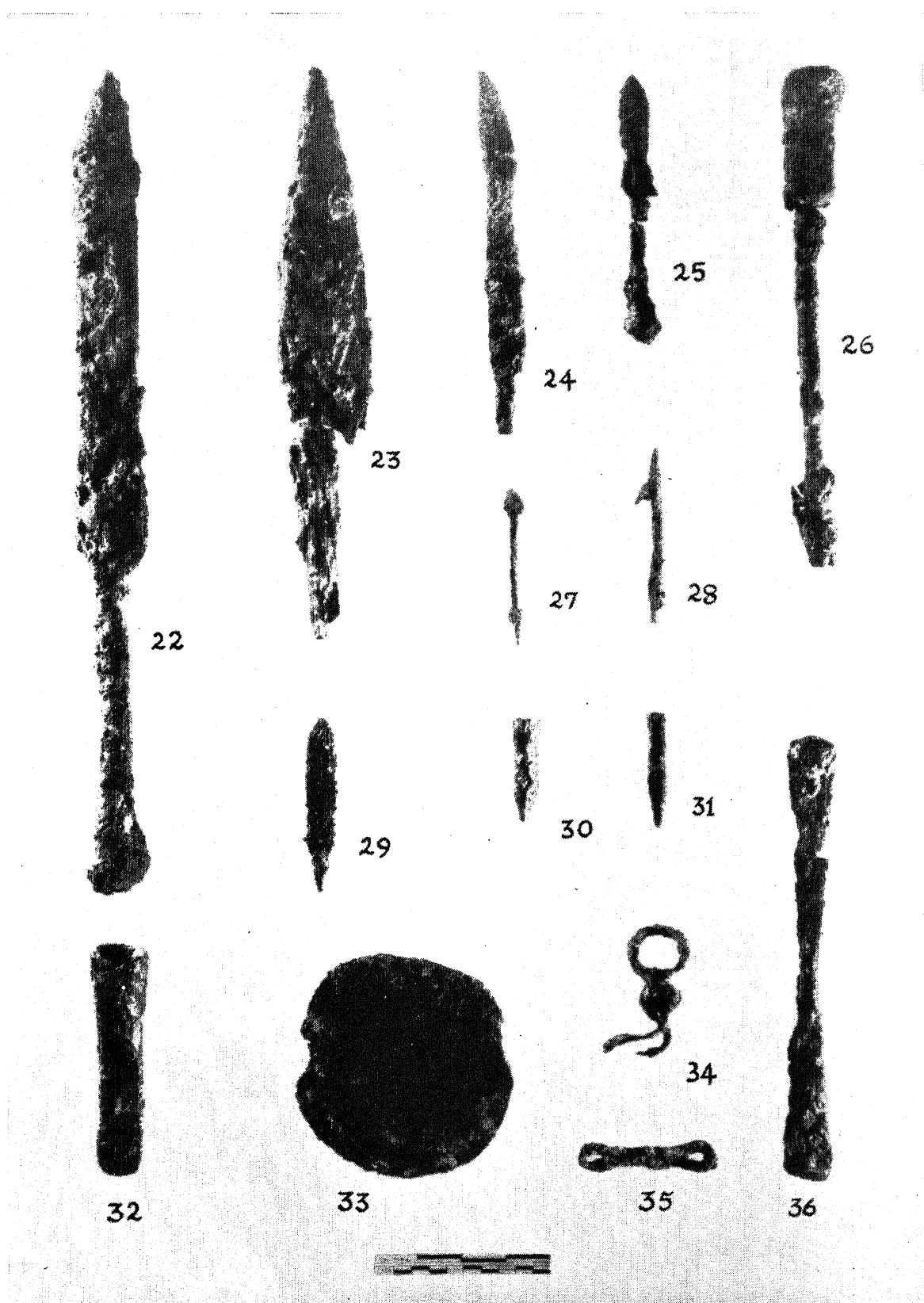


A. Iron celt



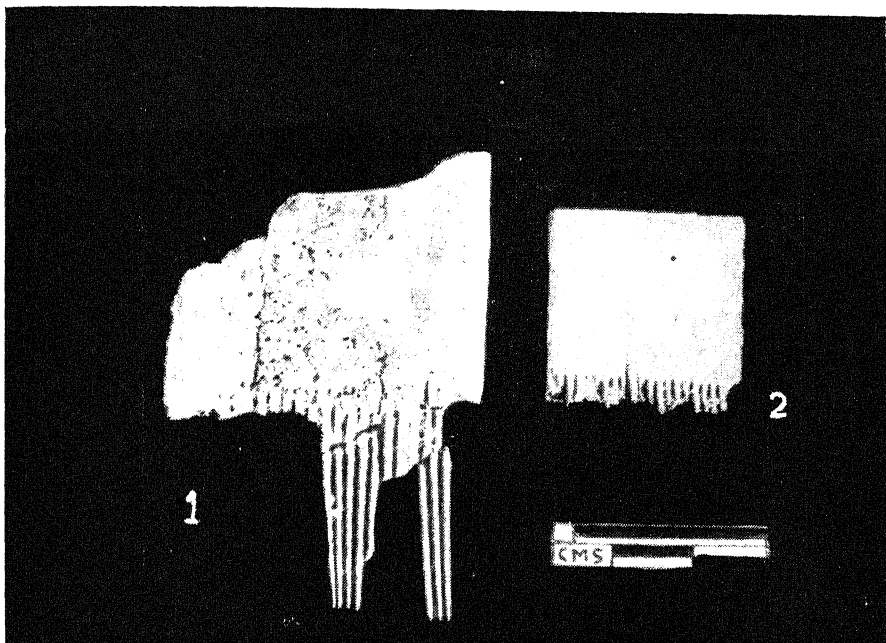
B. Iron billets



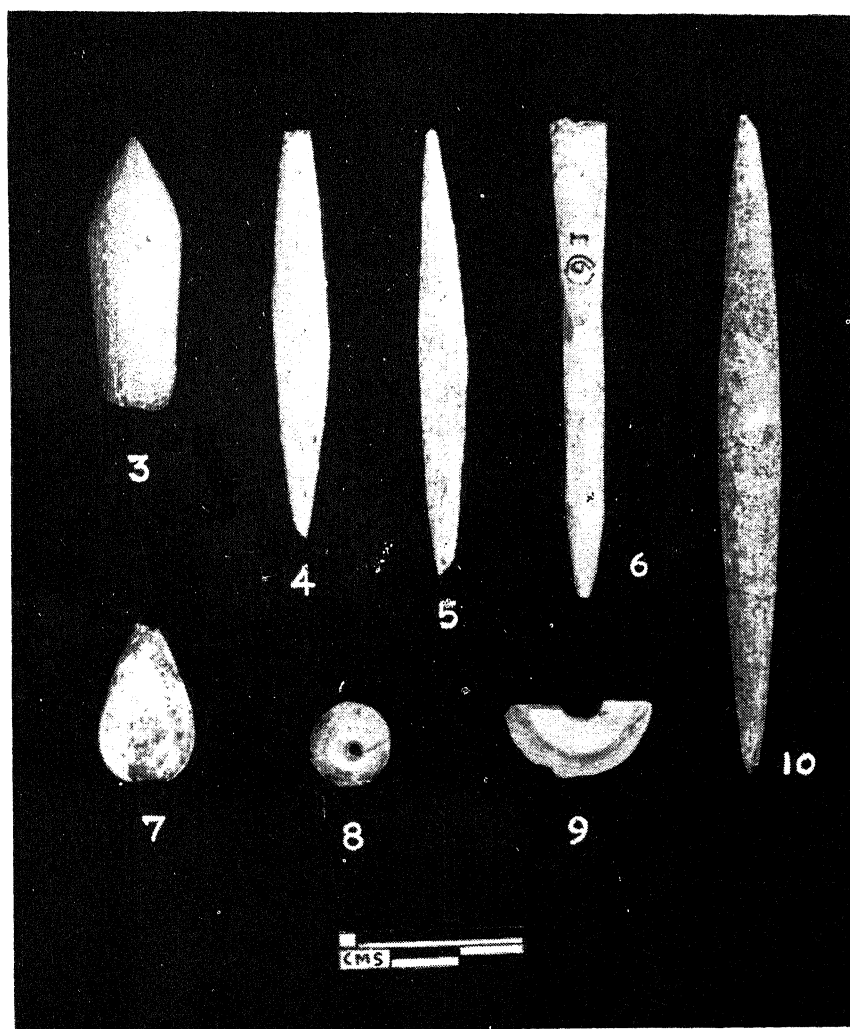


Iron objects

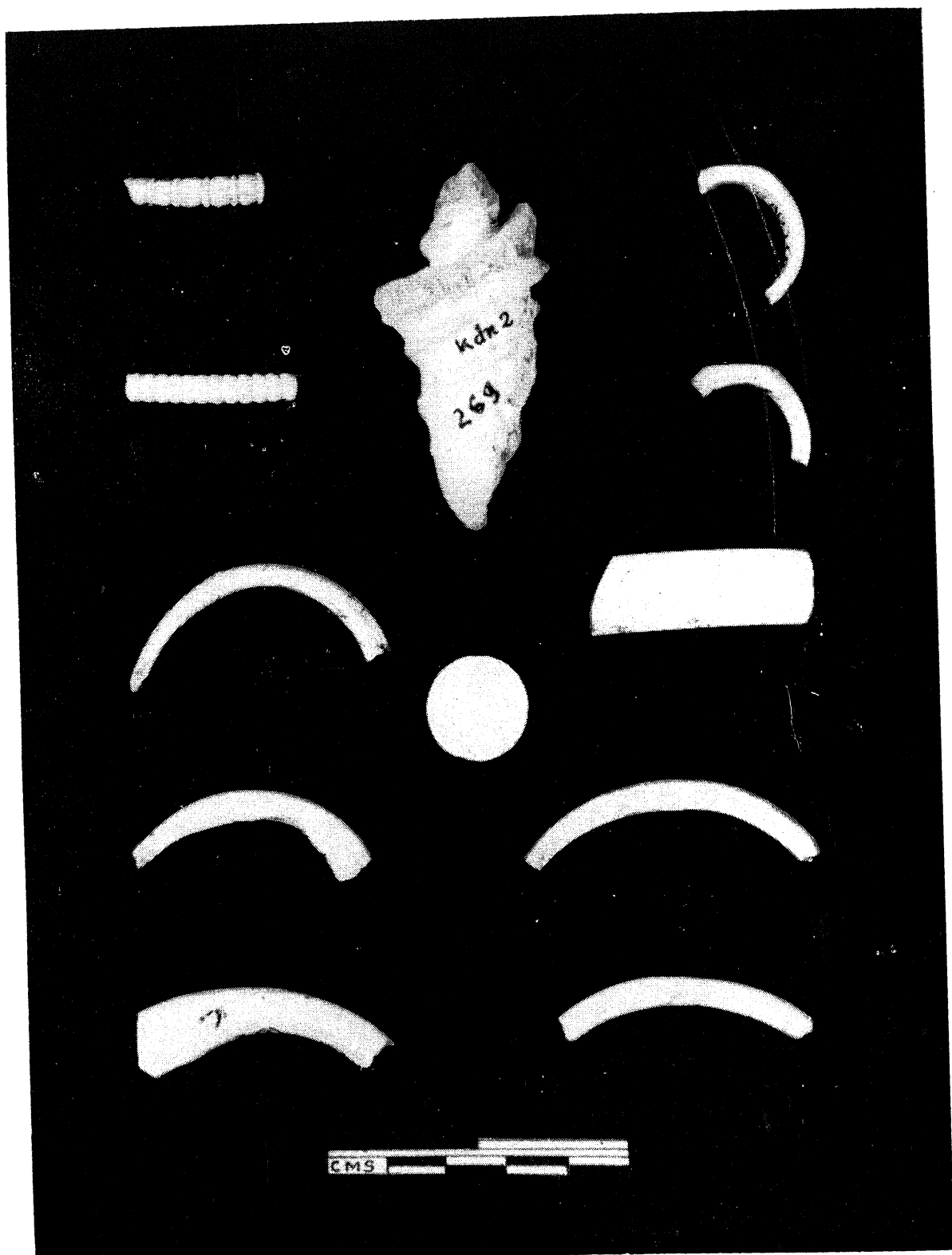
BONE OBJECTS



A. Combs

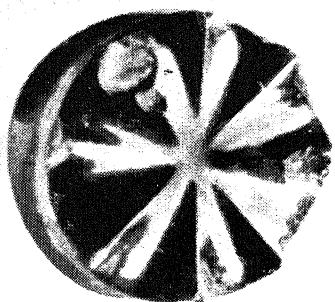


B. Styli pins, nob, button and bead



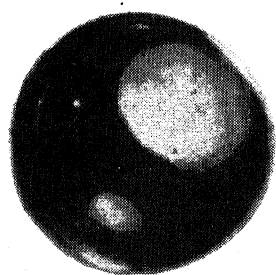
Shell objects

ORNAMENTS AND TOILET
ARTICLES

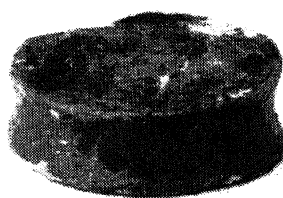


A. Jasper ear-ring and bone salaka

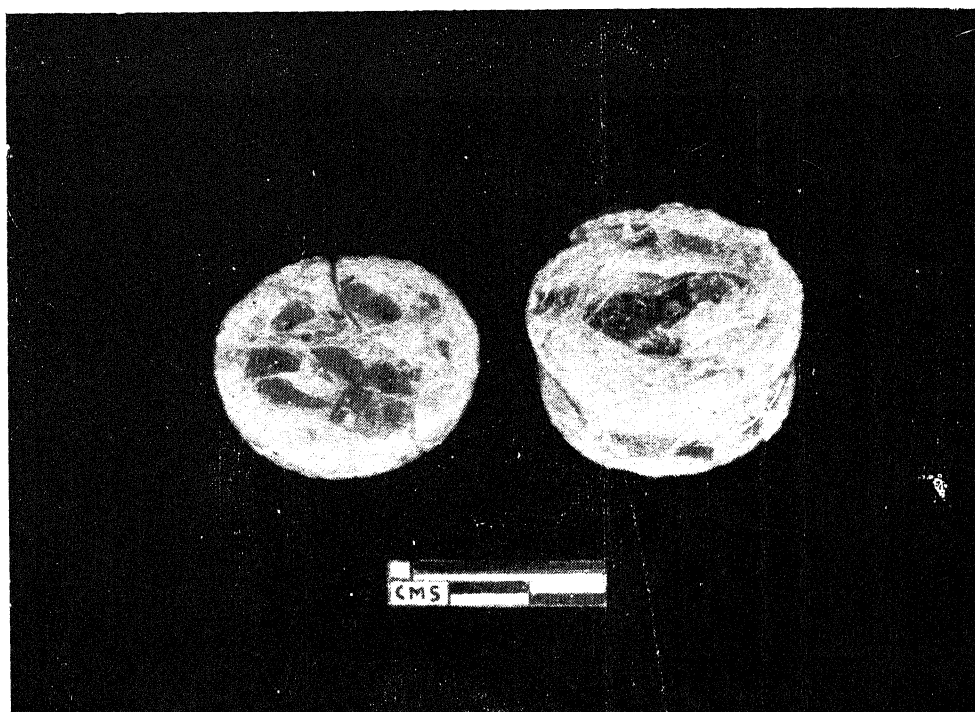
B. Jasper ear ornaments and weight



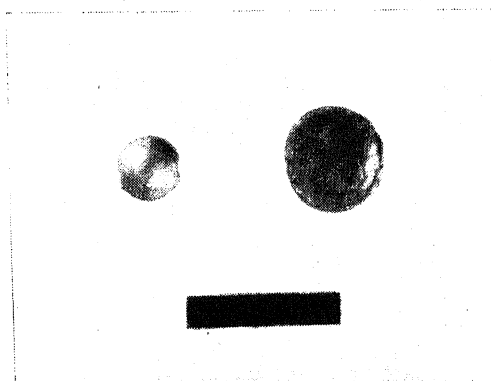
D. Jasper weight



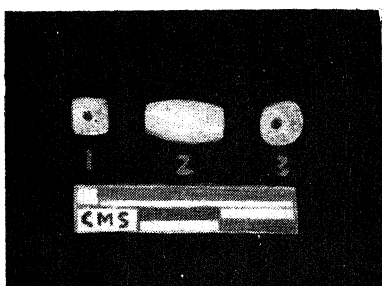
C. Glass ear ornament



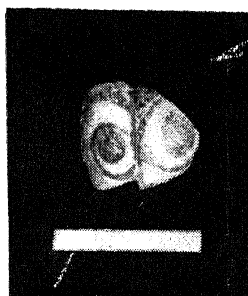
A. Glass ear-rings (Mauryan)



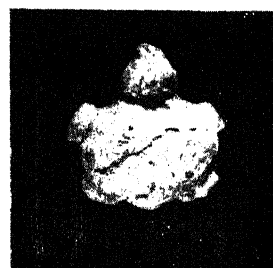
B. Gold beads (Satavahana)



C. Glass beads



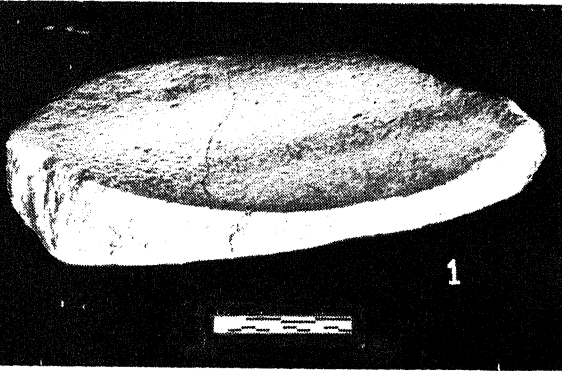
D. Glass eye-bead (Mauryan)



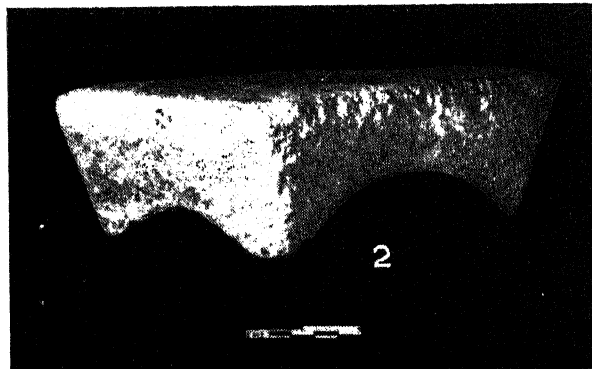
E. Tortoise-shaped Amulet

PLATE XLIX

GRINDING TOOLS



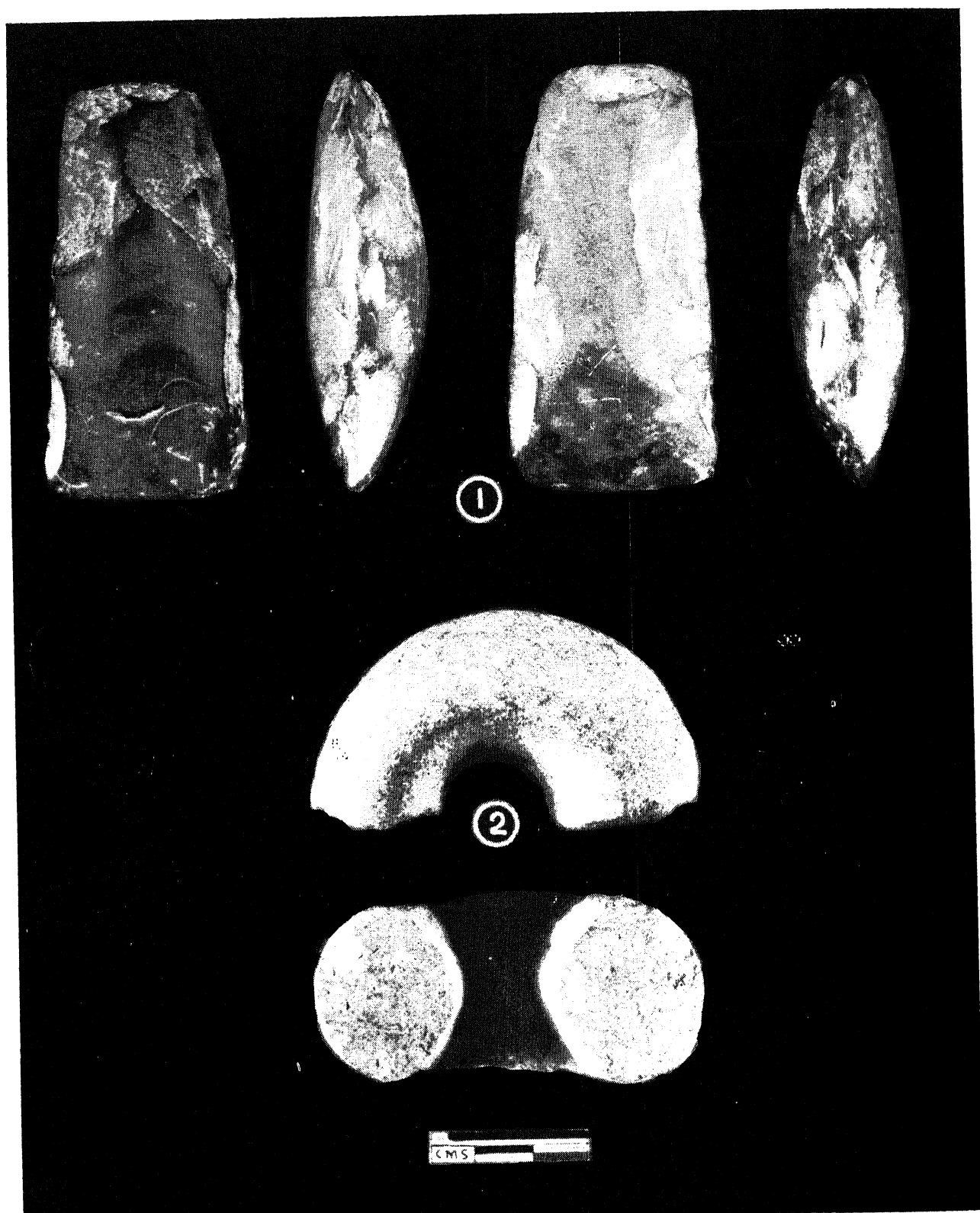
A. Grinding slab of
Period I Chalcolithic (?)



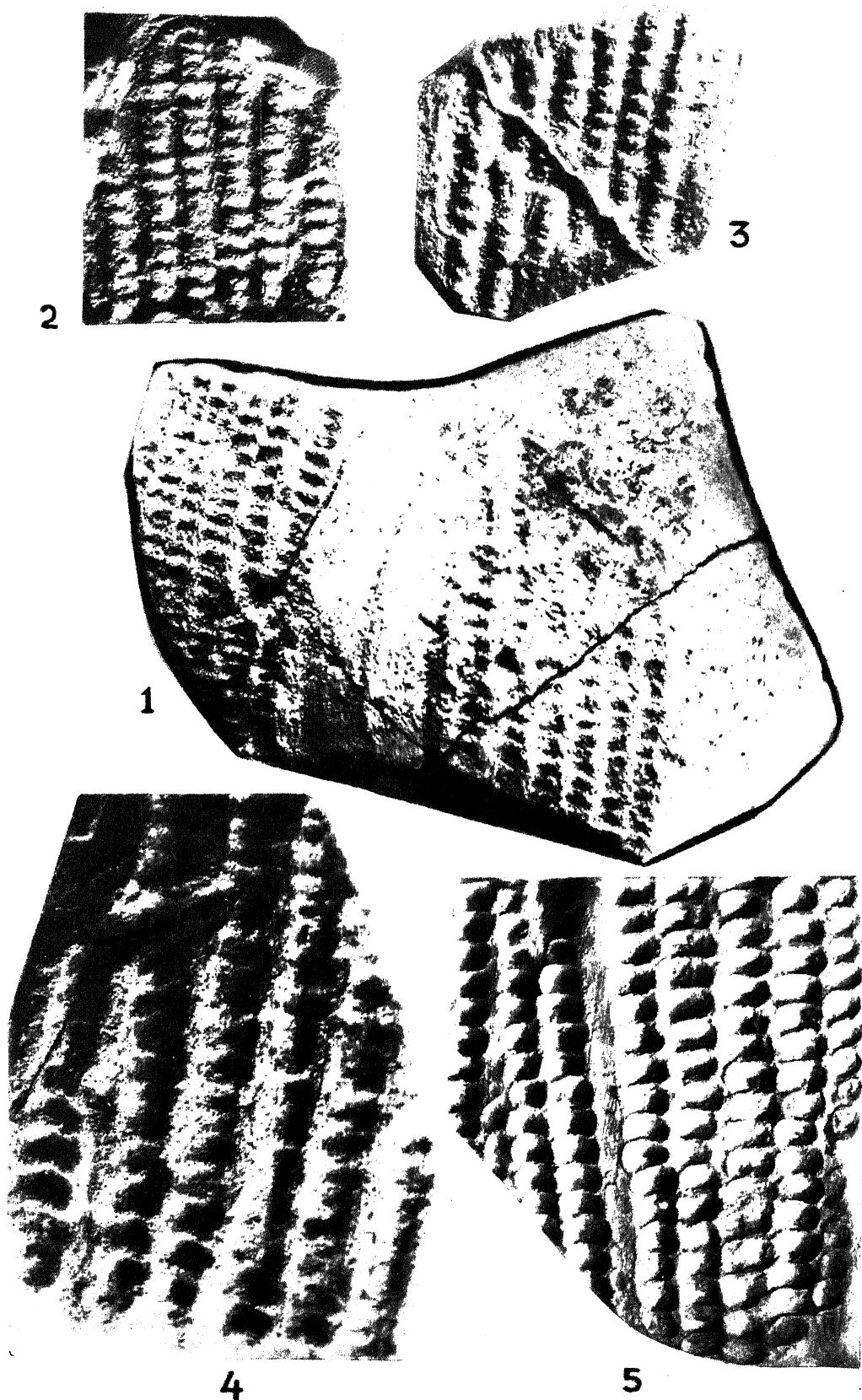
B. Short-legged quern
Period III Mauryan.



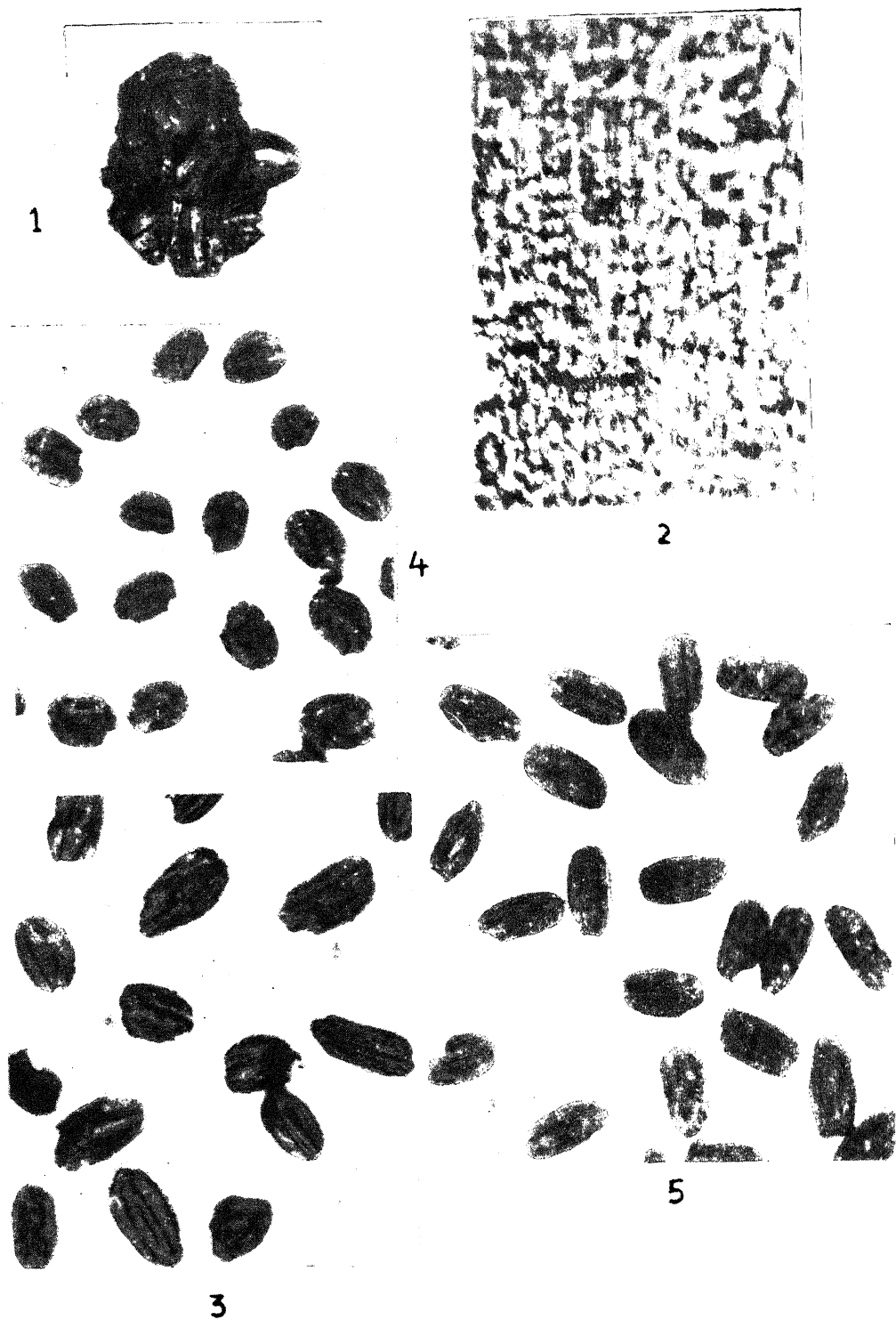
C. Legged quern
Period IV Satavahana.



Neolithic celt and perforated hammer-stone



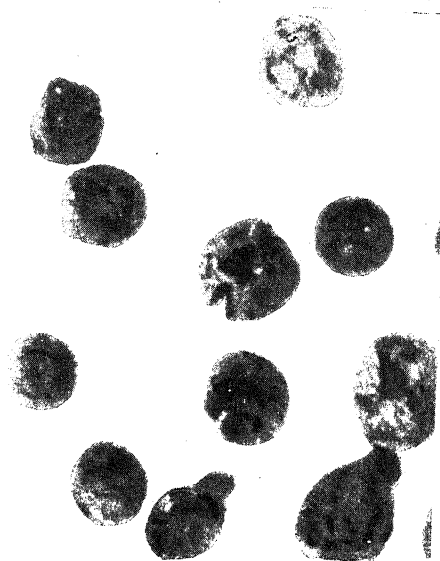
Potsherds and casts having maize impressions at Kaundinyapura



Micro-photographs of rice found at Kaundinyapura



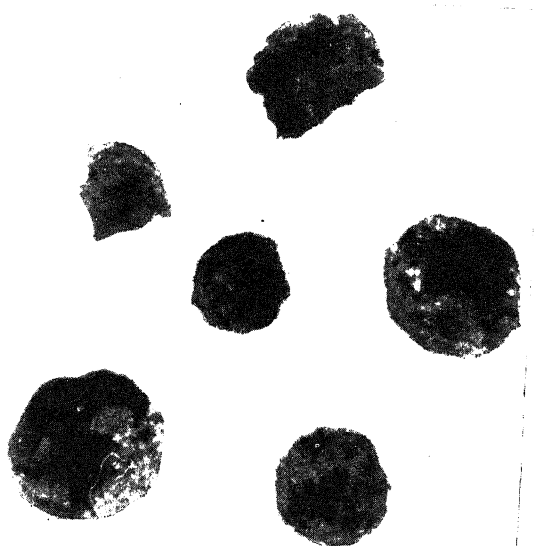
2



3



1

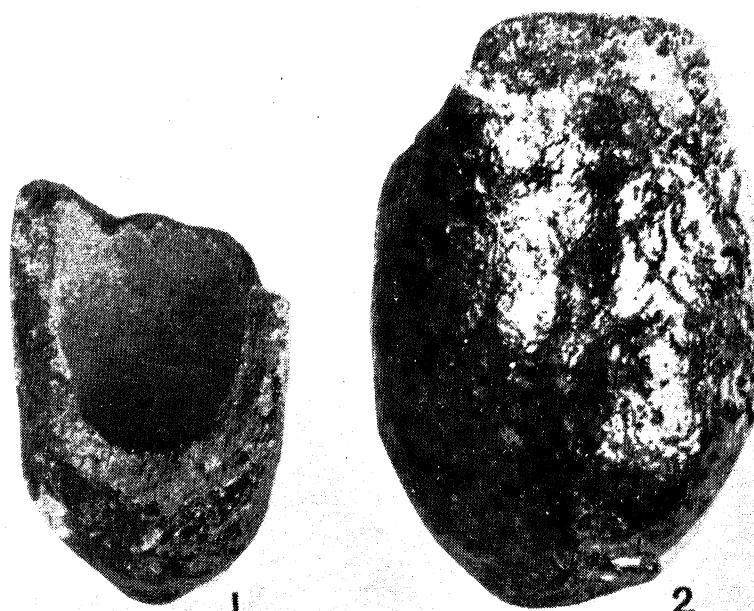


4

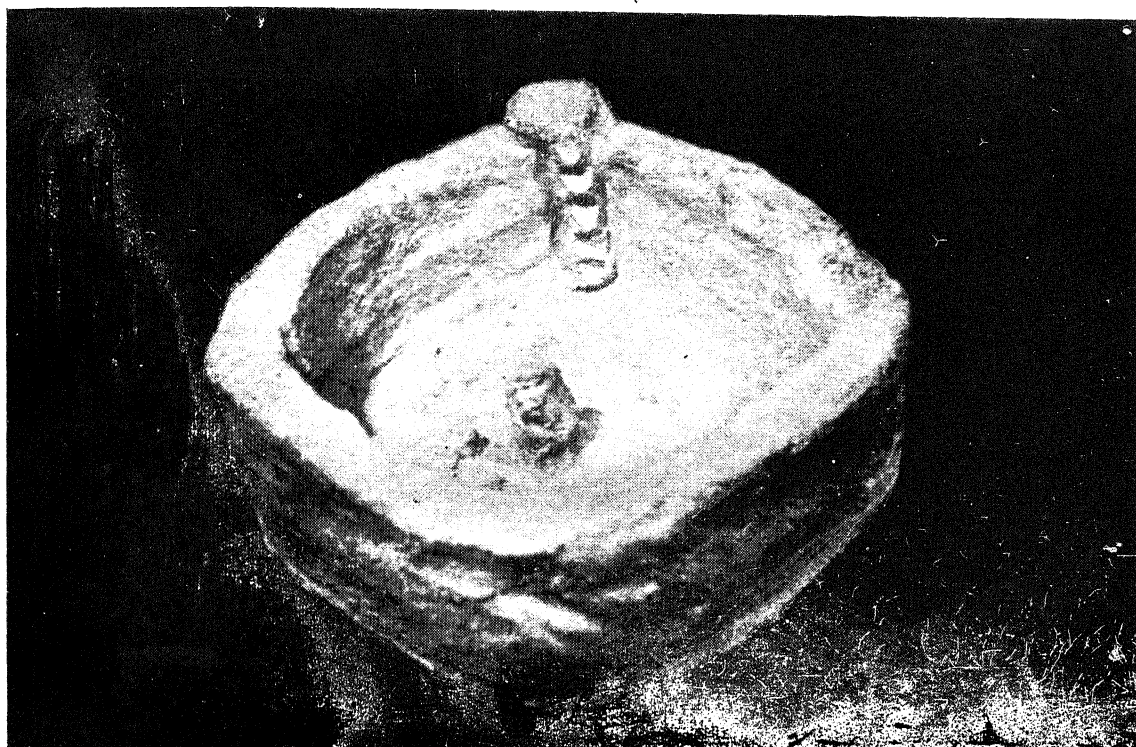
Micro-photographs of seeds found at Kaundinyapura



A. Molar of an elephant



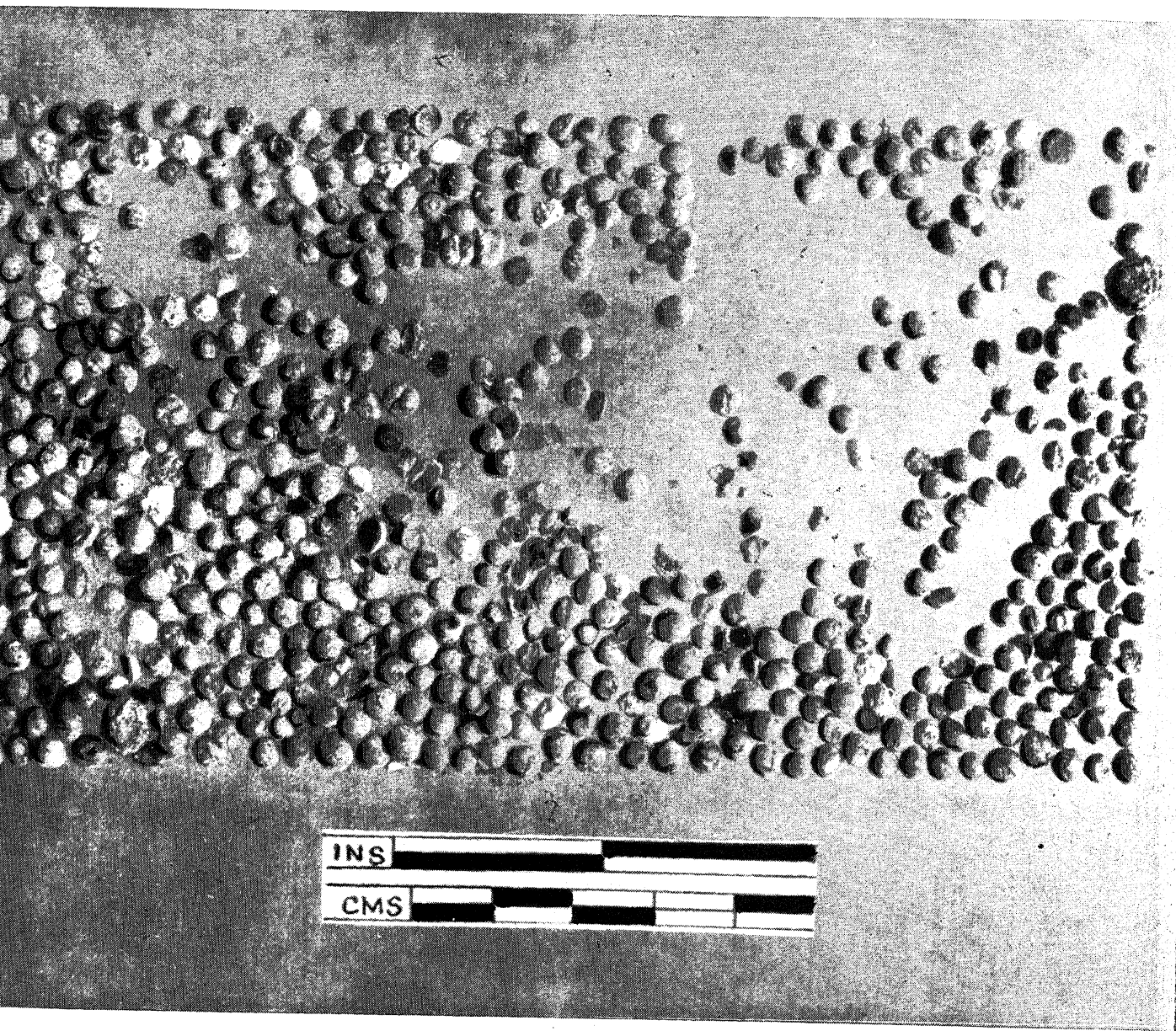
B. Crucibles



A. Votive Tank from Kolhapur



B. Votive Tank from Ter



Charred grains